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TO: Holders of the 1978 Manual on Uniform Traffic Control Devices (Revision No. 1)

To maintain your 1978 Manual on Uniform Traffic Control Devices (MUTCD), the following procedure will be used.

When the text or illustration on a page is changed, a revised page will be issued noting the date of issuance. The location of the text revision will be identified by a vertical line adjacent to the text. Also included is a reference to the particular Official Ruling that approved the revision.

When a new page is issued, it will be numbered so that it can be inserted in its proper place. A decimal point number will be added after the regular page number preceding the new page.

Pen and ink changes will be issued to cover those revisions that can be made simply. This will reduce the number of revised pages printed and extend the subscription service.

Each package will include a listing of Official MUTCD Rulings on Interpretations, Changes and Experimentations. This listing is to be placed behind the tab labeled Official Rulings at the very back of the MUTCD. The listing provides the number of the action date. Some of the rulings will include a compliance date by which that revision is to be fully implemented.

1979 STANDARD HIGHWAY SIGNS BOOKLET: Now available from the Government Printing Office (GPO) is the 1979 edition of the Standard Highway Signs booklet which contains the design details of the signs prescribed or provided for in the MUTCD, 1978 edition, for use on all streets and highways open to public travel. A basic distribution has been made to each State highway agency and other concerned agencies for official use. Additional copies desired by agencies outside of FHWA should be ordered directly from the Superintendent of Documents, U.S. GPO, Washington, D.C. 20402. The cost is $10.00 for single copies with a discount of 25 percent available for orders of 100 or more shipped to one address. The cost includes the design details, a looseleaf binder, and a subscription service for subsequent changes to be maintained by GPO. Those desiring to obtain a copy of the booklet can use the order form included on the following page.

WORK ZONE TRAFFIC CONTROL - STANDARDS AND GUIDELINES: Also available from GPO is Part VI of the MUTCD and Part VI of the Traffic Control Devices Handbook printed as one document. This document has been prepared for those people involved with the planning, design, installation, maintenance, and inspection of traffic control activities for all types of work zones in or along all streets and highways open to public travel. The cost from GPO for a single copy is $4.50. Bulk orders of 100 or more are priced less. There is no subscription updating service provided for this document. (Stock No. 050-001-00175-6.)

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PEN AND INK CHANGES

The following pen and ink changes are being made to cover errata items or revisions to the text that can be made simply. In future MUTCD revisions, these pen and ink changes will be incorporated into the printed text at a time when other revisions on the particular page are made.

The purpose in making these pen and ink changes is to extend the period of time that the subscription service will run.

Page 2A-17. At the end of Section 2A-31, add a reference (Ref. Sec. 2E-41).

Page 2B-3. At the end of the first line of the next to the last paragraph of Section 2B-5, add the word "railroad" after "unprotected."

Page 2B-9. Modify the R2-5b sign to delete the legend M.P.H. and enlarge the numerals 30.

Page 2B-19. Change the designation of the WRONG WAY sign from R5-9 to R5-1a in the title of 2B-27, the first sentence of paragraph 1 of 2B-27 and beneath the illustration.

Page 2B-26. On the fourth line of the third paragraph, change "24" to "12."

Page 2C-13. Change designation of illustration of "Trucks use lower gear" plaque to W7-2b.

Page 2D-24. In paragraph 4, first sentence, delete "more important."

Page 2E-5. Add a line between "*See Section 2E-23," and "B. Gore Signs." Delete information between "Table II-1" and "Distance."

Page 2E-6. Delete information between "Table II-1" and "H. Distance Signs."

Page 2E-24. Add asterisk to "No Right Turn" symbol sign.

Page 2F-6. Delete information between "Table II-2" and "C. Pull Thru Signs."

Page 2F-14. Section 2F-23 - Correct spelling of diagrammatic in second paragraph, line 4, and third paragraph, line 3.

Page 2F-40. Add "(D12-1)" after "signs" in the next to the last line.

Page 3B-1. In the fourth unnumbered paragraph, change "3-1a" to "3-2a" in line 2. Change "3-1b" to "3-2b" in line 3.

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Page 3B-17. In the second paragraph, eighth line, change "(sec. 2B-17)" to "(sec. 2B-19)."

Page 3B-22. In the third line from the bottom, add the word "numerals" after "letters." In the bottom line, delete the word "symbols."

Page 3D-2. Add "and freeway" to the end of the first line.

Page 4B-6. Section 4B-7 - In the first paragraph, line 3, delete "n" in "given."

Page 4B-10. Section 4B-10 - In the third paragraph, second line, add "driver" after "approaching."

Page 6B-26. Section 6B-31 - Remove "s" in "Radios" in the title and in line 1.

Page 7C-2. In the second sentence, third paragraph, Section 7C-6, delete the word "symbols."

Page 9B-4. Section 9B-8 - Change all references to R3-10 and R3-11 to R3-16 and R3-17, respectively.

Page 9B-13.- Change designations of illustrations marked "D1-1b(R)" and "D1-1b(L)" to "D1-1b(L)" and "D1-1b(R)," respectively.

Page 9C-4.- Revise the distance from "250" to "50" in the illustration showing RR xing.

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RECORD OF REVISIONS OR ADDITIONS

Revision Number	Date Issued	Pages Revised or Added
1	12/79	1A-6, 2A-17, 2B-3, 2B-9, 2B-19, 2B-24, 2B-26, 2C-8, 2C-9, 2C-13, 2D-18, 2D-20, 2D-21, 2D-22, 2D-24, 2D-26, 2D-27, 2D-28, 2D-29, 2D-30, 2E-4, 2E-5, 2E-6, 2E-24, 2F-5, 2F-6, 2F-7, 2F-14, 2F-15, 2F-20, 2F-30, 2F-34, 2F-36, 2F-37, 2F-38, 2F-40, 2F-41, 2F-42, 2F-43, 2F-44, 3B-1, 3B-11, 3B-13, 3B-17, 3B-22 3B-26, 3D-2, 3D-3, 4B-6, 4B-10, 6B-20, 6B-21, 6B-26, 6B-27, 6B-29, 6F-1, 6F-2, 6F-4, 6F-5, 7C-2, 7E-2, 8B-3, 9B-1, 9B-4, 9B-9, 9B-10, 9B-13, 9C-4.

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Listing of Official MUTCD Rulings on Interpretations, Changes and Experimentations

SIGNS

Number	Title/Section	Ruling	Action Date
II-2 (Chng.)	Diesel Fuel Sign 2D-46, 2F-33, 2F-34	Approved the addition to the MUTCD which will provide for the display of diesel fuel in general motorist service signing. A new symbol sign was also approved.	4/2/78
II-3 (Expr.)	Overload Symbol Sign	Symbol sign to emphasize restricted loading contained too much detail and had vague message. Evaluation of such a sign would be difficult to assess. The request was not approved.	8/4/78
II-6 (Chng.)	Signing for Restrooms at Rest Areas 2D-42, 2F-35	Standardized rest area sign to inform approaching motorists of the availability of restrooms was approved.	9/28/78
II-8 (Chng.)	Ramp Terminal Destination Signs 2D-35	The three destination limit on ramp signing has been modified to permit four destinations on ramp signing when four destinations are included on the main line.	9/26/78
II-9 (Chng.)	Turn Sign Usage Criteria	This request to delete references to speed when determining whether to use a curve or turn sign was denied. Requester proposed that the arrow should more closely resemble the roadway alignment rather than to indicate the severity of curve.	9/21/78

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Number	Title/Section	Ruling	Action Date
II-11 (Chng.)	Added Lane Symbol Sign 2C-18, 2C-18.1	A symbol sign was approved that informs motorists on the main roadway as well as those on the ramp that a merging maneuver is not necessary.	7/19/78
II-13 (Intr.)	Signing for Regional Shopping Centers	Signing for destinations such as regional shopping centers on the Interstate System or other freeways is not in keeping with national MUTCD standard signing principles for such highways.	8/17/78
II-14 (Expr.)	Symbolic No Right (Left) Turn on Red	Approval was given to experiment with a sign depicting the Right (Left) Turn prohibition symbol along with the words ON RED.	12/18/78
II-15 (Expr.)	Special Merge Sign	A warning sign indicating MERGE with a downward sloping arrow on a trapezoid for use in a special case of a left-hand on-ramp merge situation was not approved for experimentation.	8/10/78
II-17 (Expr.)	Sign Legend for Tourist Information Centers	Experimentation approved to determine if there is a detrimental effect in using the term TOURIST as opposed to TRAVELER in conjunction with information centers.	10/31/78
II-25 (Expr.)	Overhead Guide Signs	Experimentation approved to evaluate the effectiveness of nonilluminated opaque background overhead guide signs having reflectorized legend and border.	5/21/79

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Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

MARKINGS

Number	Title/Section	Ruling	Action Date
III-6 (Chng.)	Edgeline Requirements for Rural Highways 3B-6	Requires the use of edgelines on all rural multilane divided highways. A compliance date of January 1, 1981, has been established.	12/21/78

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Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

SIGNALS

Number	Title/Section	Ruling	Action Date
IV-2 (Intr.)	Intersection Control Beacon 4B-6, 4E-3	The MUTCD interpretation is twofold: (1) Where a route turns, the use of flashing red beacons on three approaches and a flashing yellow beacon on one approach, while not normally desirable, is not in conflict with the MUTCD; (2) the use of a steady green arrow in conjunction with flashing beacons is in conflict with Sections 4B-6 and 4B-16 of the MUTCD because there is potential for signalized conflict.	9/5/78
IV-3 (Expr.)	Blinking Signaling in Traffic Signals	The request was to code red and green traffic signal indications to apprise motorists and pedestrians of the time remaining before the light will change. The request was denied based on the possible hazardous condition that the proposed experimentation would create.	9/18/78
IV-4 (Chng.)	Noncontinuous Use of Emergency Signals 4B-19, 4E-21	The request to eliminate the requirement that emergency traffic signals be operated continuously and to allow them to remain "dark" during times that they are not activated for emergency purposes is denied. Drivers are conditioned not to expect "darkened" signals as required in Section 4B-19 so that adoption of this practice may pose accident hazards.	9/15/78

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Listing of Official MUTCD Rulings on Interprptations, Changes and Experimentations

CONSTRUCTION AND MAINTENANCE

Number	Title/Section	Ruling	Action Date
VI-4 (Chng.)	Shoulder Drop-Off Sign 6B-33	A symbol sign depicting a shoulder drop off was approved as an alternate to the word message sign (W8-9) LOW SHOULDER.	7/19/78
VI-5 (Expr.)	Experimentation with Work Zone Traffic Control Devices	Approval was given to determine the effectiveness of selected barricades and channelizing devices and which elicits the most favorable driver response.	9/20/78

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Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

BICYCLE FACILITIES

Number	Title/Section	Ruling	Action Date
IX-1 (Chng.)	Symbol Sign for Interstate Bike Routes 9B-21	A route marker was approved for use on bicycle routes that extend for long distances in two or more States.	7/26/78
IX-3 (Chng.)	Hostel Sign	A symbol sign closely resembling the Camping/ Picnicking sign to provide guidance to hostels was not approved for use as a national standard.	9/12/78

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(b) A description of the proposed change, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.
(c) Any illustration which would be helpful to understand the experimental device or use of this device.
(d) Any supporting data as to how the experimental device was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how this choice of device or application was arrived at.

Additional details are available from the Federal Highway Administration.

4. Requests will be classified as follows:
   (a) *Interpretation*—this includes application and operation of standard traffic control devices, official meanings of standard traffic control devices, or variations from standard device designs.
   (b) *Change*—this includes consideration of new devices to replace a present standard device, additional devices to be added to the list of standard devices, or revisions to recommended application or meaning criteria.
   (c) *Experimentation*—this includes consideration of testing or evaluating a new traffic control device, its application or manner of use.
5. The Federal Highway Administration will be responsible for notifying the party originating the request and providing the parent organization of the National Advisory Committee with a copy of each official ruling.
6. The Federal Highway Administration will maintain files on all officially designated requests and actions taken on the development of improved standards.
7. Periodically, text revisions and approved interpretations and experimentations will be published and distributed by the Government Printing Office to those Manual owners shown on the GPO subscription list. For additional copies or information about such revisions, write to the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

1A-7 Relation to Other Documents

Two publications by the National Committee on Uniform Traffic Laws and Ordinances are specifically designed to provide the content and language of legislation needed to give regulatory devices the same meaning in all jurisdictions. These are the Uniform Vehicle Code (chapter 11, Rules of the Road) for States, and the Model Traffic Ordinance for municipalities. Both the Code and the Ordinance require the placing

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of signs or other traffic control devices to make some of their provisions effective, and both define the legal meaning of certain devices. The Code directs the State authorities to adopt a manual for a uniform system of traffic control devices, and reqnires all devices to conform thereto. The Ordinance also requires municipal devices to conform with the State manual. The adoption of appropriate legislation is an essential step toward uniformity.

To the extent they are incorporated by specific reference, the following documents are made a part of this Manual:

Standard Alphabets for Highway Signs and Pavement Markings—Federal Highway Administration, 1977 Edition

Standard Color Tolerance Charts—Federal Highway Administration, 1970

Standard Highway Signs Booklet—Federal Highway Administration, 1979 Edition

Adjustable Face Vehicle Traffic Control Signal Head Standards—Institute of Transportation Engineers, 1970

Adjustable Face Pedestrian Signal Head Revised Standards—Institute of Transportation Engineers, 1975

National Standards for Specific Information Signs—Federal Highway Administration, 1979 (Federal-Aid Highway Program Manual 6-8-3-8)

Standard for Flashing and Steady Burn Barricade Warning Lights—Institute of Transportation Engineers, 1977

Standard for Traffic Signal Lamps—Institute of Transportation Engineers, 1967

Other documents that are useful sources of information with respect to utilization of these standards include:

Transportation and Traffic Engineering Handbook—Institute of Transportation Engineers, 1976

Highway Capacity Manual—Transportation Research Board, 1965

A Policy on Geometric Design of Rural Highways—American Association of State Highway and Transportation Officials, 1965

A Policy on Design of Urban Highways and Arterial Streets—American Association of State Highway and Transportation Officials, 1973

Manual on Traffic Engineering Studies—Institute of Transportation Engineers, 1976

Volume 12, Highway Safety Program Manual, Highway Design, Construction, and Maintenance—Federal Highway Administration

Volume 13, Highway Safety Program Manual, Traffic Engineering Services—Federal Highway Administration

Traffic Control Devices Handbook; An Operating Guide—Federal Highway Administration, 1975

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One Way signs are not ordinarily needed on the one-way roadways of divided expressways, where the design of interchanges indicates the direction of traffic on the separate roadways.

2B-30 Divided Highway Crossing Sign (R6-3, R6-3a)

The Divided Highway Crossing sign may be used as a supplemental sign on the approach legs of a roadway that intersects with a divided highway.

The sign may be placed beneath a stop sign or mounted separately.

When the Divided Highway Crossing sign is used at a four-legged intersection, sign R6-3 shall be used. When used at a "T" intersection, sign R6-3a shall be used. The standard and minimum size sign in 24" by 18".

R6-3
24"×18"

R6-3a
24"×18"

2B-31 Urban Parking and Stopping Signs (R7 Series)

Parking signs and other signs governing the stopping and standing of vehicles cover a very wide variety of regulations and only general specifications can be laid down here. Typical examples are as follows:

NO PARKING ANY TIME (R7-1)
NO PARKING 8:30 AM to 5:30 PM (R7-2)
NO PARKING EXCEPT SUNDAYS AND HOLIDAYS (R7-3)
NO STANDING ANY TIME (R7-4)
ONE HOUR PARKING 9 AM-7 PM (R7-5)
NO PARKING LOADING ZONE (R7-6)
NO PARKING BUS STOP (R7-7, R7-107, R7-107a)

Many other wordings will be found necessary to fit local conditions. To minimize the number of parking signs, blanket regulations that apply to a given district may, if legal, be posted at municipal boundary lines. School area parking signs are treated in Part VII of this Manual.

The legend on parking signs shall state whatever regulations apply, but the signs shall conform to the standards of shape, color, location and

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R7-1
12″ x 18″

R7-5
12″ x 18″

R7-107
12″ x 18″

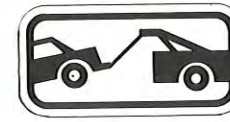
R7-108
12″ x 18″

R7-2a
12″ x 18″

R7-4
12″ x 18″

R7-107a
12″ x 30″

R7-8
12″ x 18″



R7-201a
12″ x 6″

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W2–2
30″ x 30″

W2–3
30″ x 30″

2C–13 T Symbol Sign (W2–4)

The T symbol sign is intended for use to warn traffic approaching a T-intersection on the road that forms the stem of the T, i.e., where traffic must make a turn either to the right or to the left. The sign should not generally be used on an approach where traffic is required to stop before entering the intersection, nor at a T-intersection that is channelized by traffic islands, nor where Junction signing or Advance Turn Arrows are present.

The relative importance of the intersecting roads may be shown by different widths of line in the diagram.

It may be desirable to place a double-headed Large Arrow sign at the head of the T, directly in line with approaching traffic (sec. 2C–9).

W2–4
30″ x 30″

W2–5
30″ x 30″

2C–14 Y Symbol Sign (W2–5)

The Y symbol sign is intended for use to warn traffic approaching a Y-intersection on the road that forms the stem of the Y. The sign should not generally be used at a Y-intersection that is channelized by traffic islands, nor where Junction signing or Advanced Turn Arrows are present.

The relative importance of the intersecting roads may be shown by different widths of line in the diagram.

It may be desirable to erect a double-headed Large Arrow sign (sec. 2C–9) at the fork of the Y directly in line with approaching traffic.

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2C-15 Stop Ahead Sign (W3-1)

A STOP AHEAD sign is intended for use on an approach to a STOP sign that is not visible for a sufficient distance to permit the driver to bring his vehicle to a stop at the STOP sign. Obstruction(s) causing the limited visibility may be permanent or intermittent.

The STOP AHEAD sign shall be a minimum of 30 x 30 inches.

In some cases, it may be used for emphasis where there is poor observance of the STOP sign.

The word message STOP AHEAD sign (W3-1) may be used as an alternate to the symbol sign (W3-1a).

W3-1a
36″ x 36″

W3-2a
36″ x 36″

W3-3
36″ x 36″

2C-16 Yield Ahead Sign (W3-2)

A YIELD AHEAD sign is intended for use on an approach to a YIELD sign that is not visible for a sufficient distance to permit the driver to bring his vehicle to a stop at the YIELD sign. Obstruction(s) causing the limited visibility may be permanent or intermittent.

The YIELD AHEAD sign shall be a minimum of 30 x 30 inches.

The word message YIELD AHEAD sign (W3-2) may be used as an alternate to the symbol sign (W3-2a).

2C-17 Signal Ahead Sign (W3-3)

A Signal Ahead sign is intended for use in advance of any signalized location where physical conditions prevent drivers from having a continuous view of at least two signal indications for distance specified in section 4B-12. The word message SIGNAL AHEAD may be used as an alternate.

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2C-18 Merge Sign (W4-1)

A Merge sign is intended for use to warn motorists that merging movements may be encountered in advance of a point where two roadways converge and no turning conflict occurs.

The sign should be erected on the side of the major roadway on which merging traffic will be encountered and in such a position as not to obstruct the driver's view of vehicles on the entering roadway. Ordinarily the motorists on the minor or ramp roadway are aware that they may have to merge with other traffic, but an additional sign may be placed on the entering roadway as a reminder. Where two roadways of approximately equal importance converge, a sign should be placed on each roadway.

The Merge sign should not be used where two roadways converge and merging movements are not required. II-11 (c)

The Merge sign should not be used in place of a Pavement Width Transition sign where lines of traffic moving on a single roadway must merge due to a reduction in the actual or usable pavement width (sec. 2C-19).

W4-1
30" x 30"

W4-3
30" x 30"

2C-18.1 Added Lane Sign (W4-3)

An Added Lane sign is intended for use in advance of a point where two roadways converge and merging movements are not required. This sign should be erected in advance of the point of convergence and should be visible from both roadways, Otherwise, a sign should be placed on each roadways and should be visible from both roadways. II-11 (c)

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2C-19 Pavement Width Transition Signs (W4-2) (W9-1) (W9-2)

A Pavement Width Transition sign (W4-2) is intended for use to warn of the reduction in the number of traffic lanes in the direction of travel on a multilane highway. It is not justified in advance of the end of an acceleration lane. It may be used through maintenance or construction sites (sec. 6B-22).

On one-way roadways where the width of the median island will permit, two such signs can be placed facing approaching traffic, one on the right side and the other on the median island.

The LANE ENDS MERGE LEFT (RIGHT) sign (W9-2) is intended for use as a supplement to the Pavement Width Transition sign (W4-2). When used, this sign shall be placed in advance of the W4-2.

The RIGHT (LEFT) LANE ENDS sign (W9-1) is intended for use in advance of the Pavement Width Transition sign (W4-2) or the LANE ENDS MERGE LEFT (RIGHT) sign (W9-2) if it is used.

W4-2
36" x 36"

W9-1
36" x 36"

W9-2
36" x 36"

2C-20 Road Narrows Sign (W5-1)

A ROAD NARROWS sign is intended for use in advance of a transition on two-lane roads where the pavement width is reduced abruptly to a width such that two cars cannot pass safely without reducing speed. Additional protection may be provided by the use of delineators and object markers.

W5-1
36" x 36"

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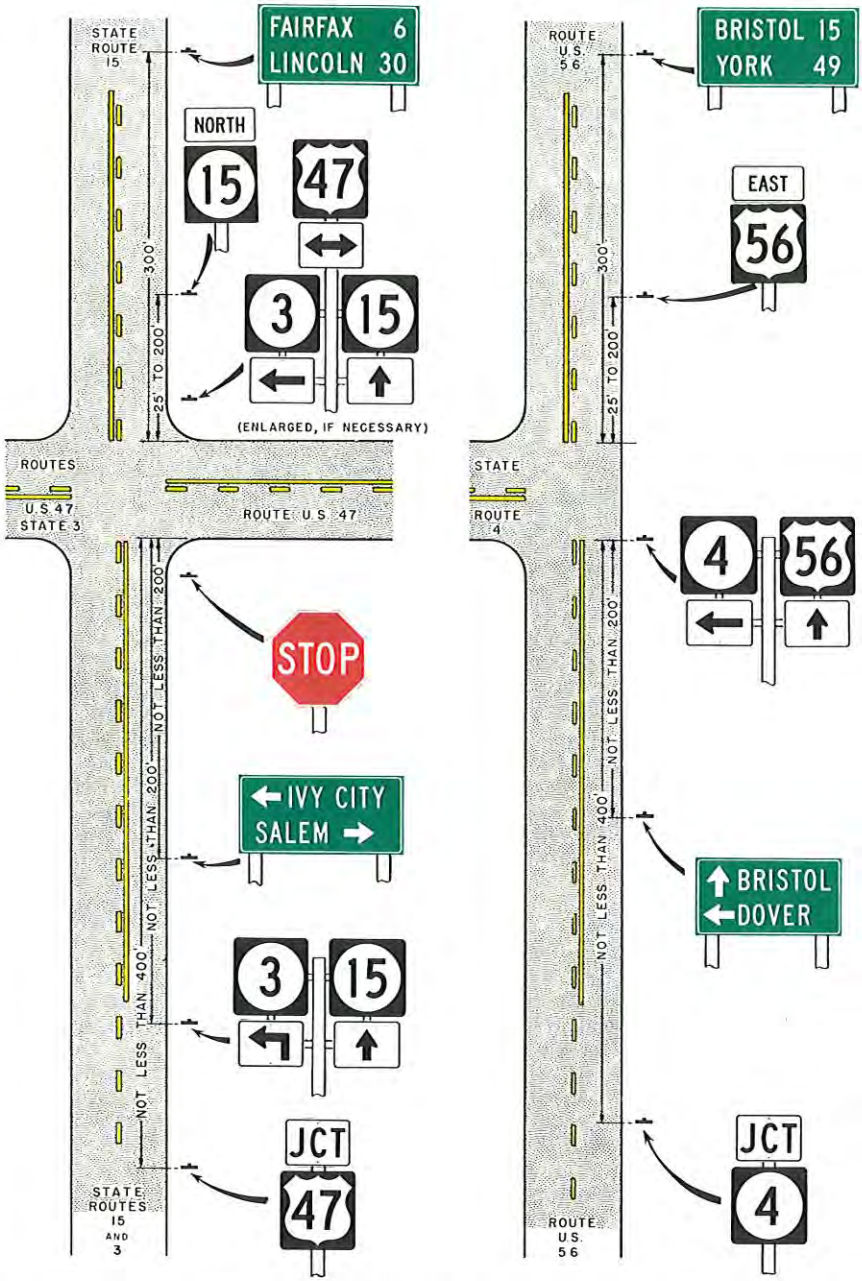

Figure 2-7b. Typical route markings at rural intersections (for one direction of travel only).

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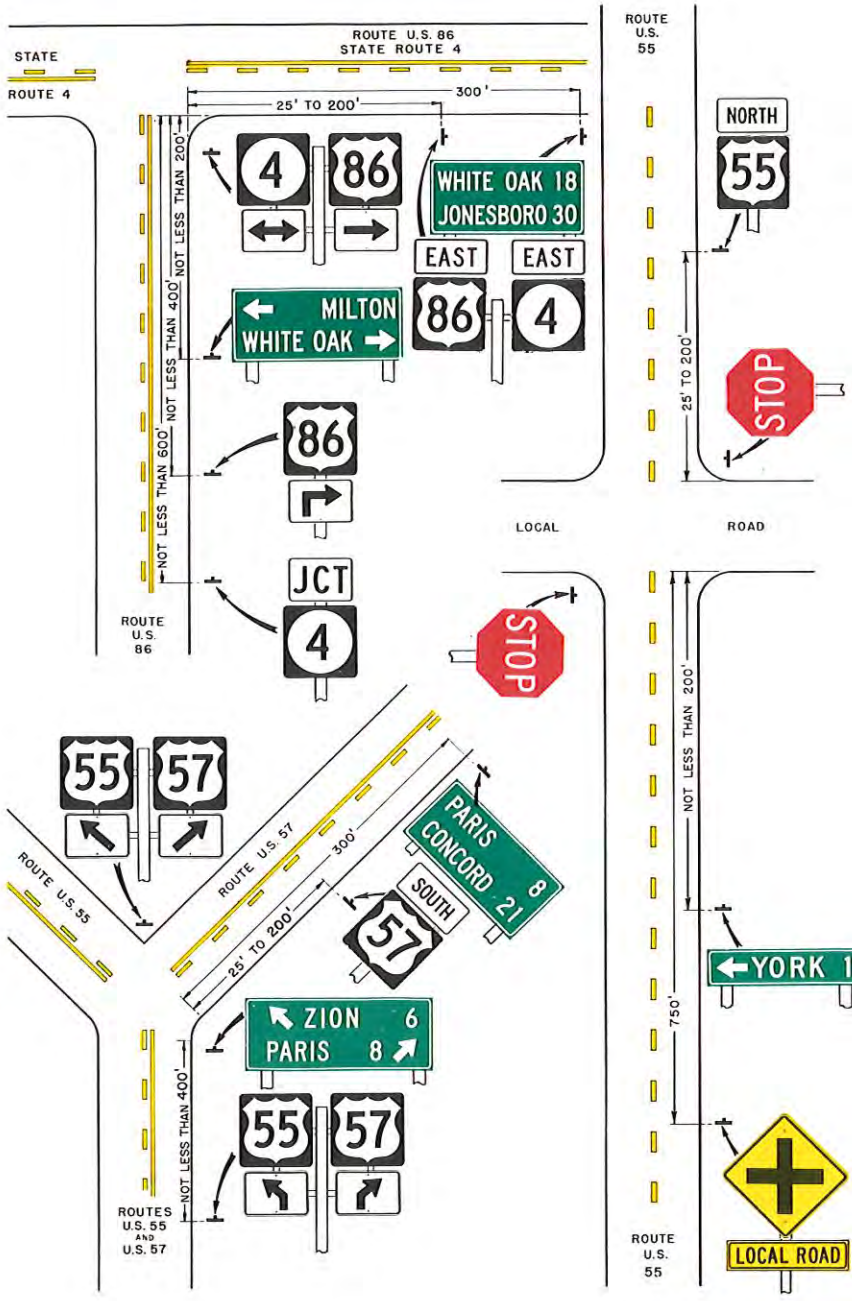

Figure 2-7c. Typical route markings at rural intersections (for one direction of travel only).

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2D-32 Confirming or Reassurance Assemblies

These assemblies shall consist of a Cardinal Direction marker and a Route Marker.

The Confirming assembly shall be erected just beyond intersections of numbered routes. In rural districts, the Confirming assembly should be placed no more than 200 feet beyond the far shoulder or curb line of the intersected highway. In urban districts this distance should be no more than 100 feet.

Reassurance markers should be erected between intersections in urban districts as needed and beyond the built-up area of any incorporated city or town.

Route markers for either confirming or reassurance purposes should be spaced at such intervals as necessary to keep the driver informed of his route. In congested urban areas, the proper location of route markers is extremely important because it is very easy for the traveler to become confused and lose his route. Extreme care should be taken to erect the markers where they can be seen easily. If necessary, they should be located on the far-side of every intersection along a numbered route, or so that at all times a route marker is visible ahead.

2D-33 Trailblazers

Traffic authorities have found it desirable to provide directional guidance to a particular road facility from other highways in the vicinity. This is accomplished by means of "Trailblazers" erected at strategic locations, usually along major urban arterials, to indicate the direction to the nearest or most convenient point of access. The use of the word TO indicates that the road or street where the marker is posted is not a part of the indicated route, and that a driver is merely being directed progressively to the route.

A Trailblazer assembly shall consist of a TO marker, a Cardinal Direction marker if needed, a Route Marker or a special road facility symbol, and a single-headed Directional Arrow pointed along the route leading to the facility. The Route Marker or symbol should not exceed 24 × 24 inches unless a 3-digit route numeral or equivalent designation must be accommodated, in which case the appropriate enlarged size may be used. The TO marker, Cardinal Direction marker, and Directional Arrow should be of the size specified for auxiliary markers of their respective type.

Trailblazer assemblies may be erected with other route marker assemblies, or alone, in the immediate vicinity of designated facilities.

2D-34 Destination Signs and Distance Signs

In addition to guidance by route numbers it is necessary to supply the traveler information concerning the destinations that can be reached by

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Trailblazer Assembly

way of numbered or unnumbered routes. This is done by means of Destination signs and Distance signs.

These signs shall have a reflectorized white legend and border on a green background. Reflectorization of the green background is desirable. On any particular highway, reflectorization should be consistently uniform.

Destination names should be in lower-case letters with initial upper-case when letter height exceeds 8 inches.

2D-35 Destination Signs (D1-1 to 3)

Except where special interchange signing is prescribed, the Destination sign shall be a horizontal rectangle carrying the name of a city, town, village, or other traffic generator, and a directional arrow. The distance to the place named may also be shown. If several destinations are to be shown at a single point, the several names may be placed on a single panel with an arrow (and the distance, if desired) for each name. If more than one destination lies in the same direction, a single arrow may be used for such a group of destinations, but in any case adequate separation should be made between any destinations or group of destinations in one direction and those in other directions, by suitable design of the arrows, spacing of lines of legend, heavy lines entirely across the panel, or separate panels.

An arrow pointing to the right shall be at the extreme right of the sign, and an arrow pointing left or vertically shall be at the extreme left for signs mounted on the right side of the roadway. The distance figures, if used, shall follow after the destination name. As a general rule, the directional arrows should be horizontal or vertical, but at an irregular intersection a sloping arrow will sometimes convey a clearer indication of the direction to be followed.

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D1-1
Variable Size

D1-2
Variable Size

D1-3
Variable Size

D1-1a
Variable Size

D1-2a
Variable Size

D1-3a
Variable Size

The size of the lettering for U.S. and State numbered routes and other major routes shall be no less than that specified in section 2D-6. If several individual name panels are assembled into a group, all panels in the assembly should be of the same length.

Destination signs are generally warranted:

1. At the intersections of U.S. or State numbered routes with Interstate, U.S. or State numbered routes.

2. At points whvre they serve to direct traffic from U.S. or State numbered routes to the business section of towns, or to other destinations reached by unnumbered routes.

Where a total of three or less destinations are provided on the Advance Guide (2E-26) and Supplemental (2E-28) signs, not more than three names shall be used on a Destination sign. Where four destinations are provided by the Advance Guide and Supplemental signs, not more than four destinations shall be used on destination signing. Four name destination signing shall consist of two separately mounted sign panels one on the left and one on the right, where space permits. Where spacing is critical or all four destinations are in one direction, a single sign assembly may be used. However, a heavy line entirely across the panel or separated sign panels shall be used to adequately separate destinations. The next most important destination lying straight ahead should be at the top of the sign or assembly, and below it the next important destinations to the left and to the right, in that order. In the case of overlapping routes, there should be shown only one destination in each direction for each route. If there is more than one destination shown in any direction, the name of the nearest city or town shall appear above that of any farther away. The destination shown for each direction should ordinarily be the next county seat or the next principal city, rather than a more distant destination. II-8 (c)

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2D-36 Location of Destination Signs

In rural districts, Destination signs should be located 200 feet or more in advance of the intersection, and following any Junction or Route Turn assemblies that may be required. In urban districts shorter distances may be justified. The Destination sign is of lesser importance than the Junction, Turn or Directional assemblies; therefore, when sign spacing is critical the Destination sign may be eliminated.

Height and lateral placement of Destination signs shall be in accordance with the general standards for sign erection.

Figures 2–7a, b and c (pages 2D–16 to 2D–18) show the use of Destination signs at rural intersections.

2D-37 Distance Sign (D2–1 to 3)

The Distance sign shall be a horizontal rectangle of a size appropriate to the required legend, carrying the names of not more than three cities, towns, villages or other traffic generators, and the distance (to the nearest mile) to those places.

The top name should be that of the next place on the route having a post office, railroad station, route number or name of an intersected highway, or other significant geographical identity. The lowermost name should be that of the next major destination or "control city." If three destinations are shown, the middle line should be used to indicate communities of general interest along the route, or important route junctions. The choice of names for this middle line can be varied on successive Distance signs to give motorists maximum information concerning communities served by the route.

The "control city" should remain the same on all successive signs throughout the length of the route until that destination is reached. There are circumstances, however, under which more than one distant point may properly be designated, as for example, where the route divides at some distance ahead to serve two destinations of similar importance. If these two destinations cannot appear on the same sign, alternating of the two names may be justified on succeeding signs. On a route continuing into another state, destination(s) in the adjacent state should be shown.

2D-38 Location of Distance Signs

Distance signs should be erected on important routes leaving municipalities, and just beyond intersections of numbered routes in rural areas.

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message Park & Ride and direction information (arrow or word message). They may contain the local transit logo and/or carpool symbol within the sign border.

If used, the local transit logo and/or carpool symbol shall be located in the top part of the sign above the message Park & Ride. In no case shall the vertical dimension of the local transit logo and/or carpool symbol exceed 18 inches.

If the function of the parking facility is to provide parking for persons using public transportation, the local transit logo symbol should be used on the guide sign. If the function of the parking facility is to serve carpool riders, the carpool symbol should be used on the guide sign. If the parking facility serves both functions, both the logo and carpool symbol should be used.

These signs shall have a reflectorized white legend and border on a rectangular green background. The carpool symbol shall be as shown in D4-2. The transit logo shall be its standard color. To increase target value and contrast for the transit logo it may be necessary to include the logo within a white border or use a white background for the logo. The important item is that the local transit logo retain its distinctive color and shape.

If used, the Park and Ride signs shall be mounted in accordance with the general specifications for the erection of signs (secs. 2A-23, 24).

D4-2
36″×48″

2D-42 Rest Area Signs (D5-1 to 5)

It is common practice on rural highways to provide roadside parks or rest areas where a traveler may stop safely away from passing traffic. It is desirable to erect word messages or symbols in advance of such areas to permit the driver to reduce speed and leave the highway safely if he desires to stop. Messages such as REST AREA (1) MILE (D5-1), PARKING AREA (1) MILE (D5-3), or ROADSIDE TABLE (D5-5)

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are typical. Other messages such as ROADSIDE PARK 1000 FEET, PICNIC TABLE ¼ MILE, or PARKING AREA ½ MILE are also appropriate. The REST AREA sign shall be used only where parking and restroom/toilets are available. Signs for this purpose shall have reflectorized white letters, symbols and border on a blue background. (C)

D5-1

D5-2

D5-3

D5-4

D5-5

D5-5a
24 x 24″
24″ x 6″

D6-1

D6-2

D6-3

2D-43 Scenic Area Signs (D6-1 to 3)

Scenic areas may be marked by signs carrying the message SCENIC AREA, SCENIC VIEW or the equivalent together with appropriate directional information. The design of the signs should be consistent with that specified for rest areas and should have reflectorized white letters, symbols, and border on a blue background. An advance sign and an additional sign at the turnoff point are usually required for this kind of attraction.

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2D-44 Recreational and Cultural Interest Area Signs (D7-1, 2)

Recreational and cultural interests are attractions or traffic generators that are open to the general public for the purpose of play, amusement or relaxation used to refresh the body or mind (RECREATION) or for the training and refining of the mind, emotions, manners, taste, etc. (CULTURAL INTERESTS). Recreational attractions would include such facilities as parks, race tracks, and ski areas, while examples of cultural attractions would include museums and art galleries.

Sn-160 (I)
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Where recreational and cultural interest areas are a significant destination on a numbered highway route, special signs may be posted for such areas, at least to the first point at which an access road intersects the highway. When recreational or cultural interest area destinations are used on primary or supplemental guide signs such signs may be either rectangular or trapezoidal in shape. When the trapezoidal shape is used, it shall have reflectorized white letters, symbols and border on a brown background. The order of preference for use of the shape and color is as follows: (1) Rectangular, white on green; (2) rectangular, white on brown, or; (3) trapezoidal, white on brown. (sec. 2F-41)

Recreational and cultural interest guide signs erected and maintained by a public park agency along roads maintained by the agency, shall conform to the standards prescribed in this section. Where another public agency maintains the road system in the park, standards prescribed in this section may be used on guide signs when agreed to by the agency maintaining the road system.

On publicly operated highways within a recreational or cultural interest area that are not primarily for intrapark traffic, guide signing shall be in conformance with the other sections of this Manual. Where a demonstrable need exists for additional types of guide signing not provided for in the Manual, the public agency may allow installation of symbols conforming to the National Park Service standards.

Linear parkway type highways that merely function as arterial connectors without providing access to recreational or cultural interest areas do not qualify for the use of brown and white guide signing.

D7-1
Variable Size

D7-2
Variable Size

2D-45 Weigh Station Signing (D8-1 to 3)

The general concept for Weigh Station signing is similar to Rest Area signing, since in both cases traffic using either area remains within the right-of-way.

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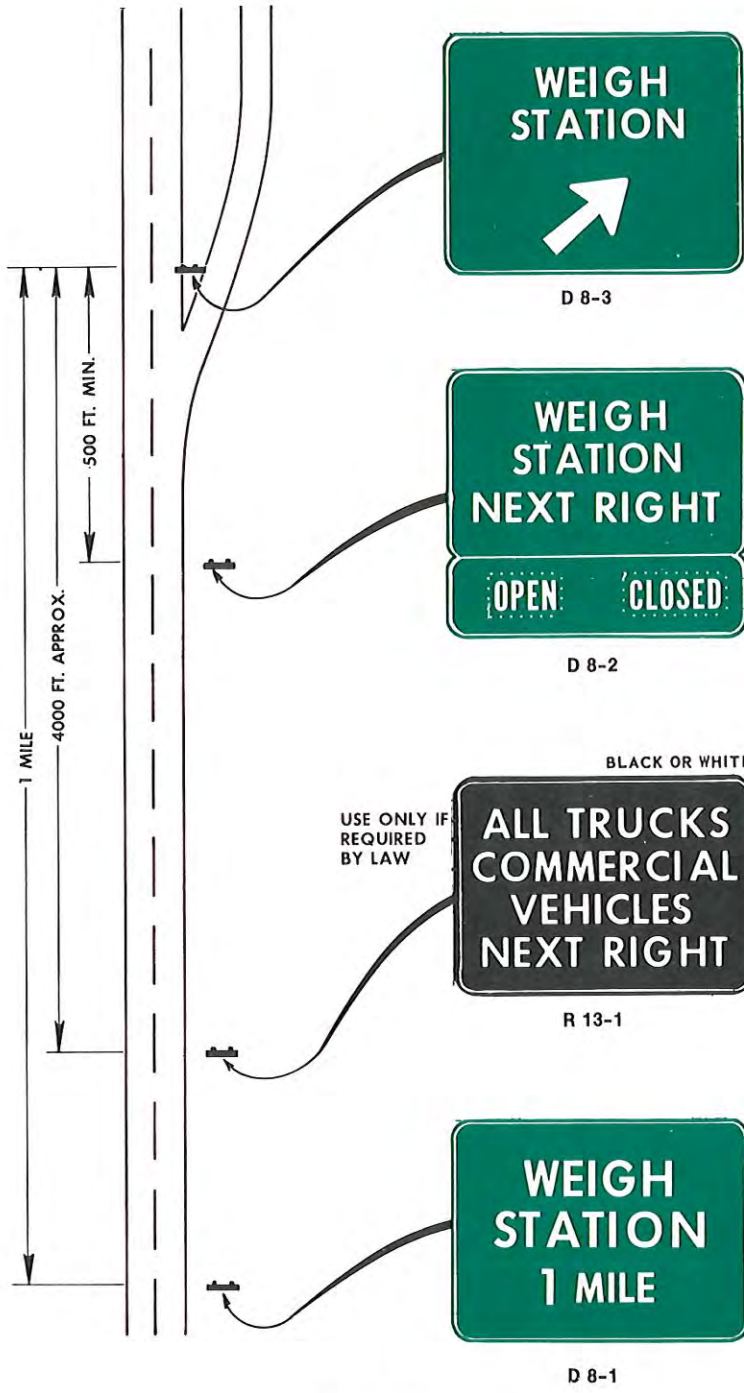

Figure 2-8. Weigh Station signing.

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The standard installation for Weigh Stations shall include three basic signs:

1. Advance sign (D8-1)
2. Exit Direction sign (D8-2)
3. Gore sign (D8-3)

The location of these signs is shown in figure 2-8. Where State law requires a regulatory sign in advance of the Weigh Station, a fourth sign (sec. 2B-42) may be located following the Advance sign. Design details for these signs are included in the Standard Highway Signs booklet.*

The Exit Direction sign (D8-2) or the Advance sign (D8-1) should display, either within the sign border or on a supplemental panel, the changeable message OPEN or CLOSED. Remote control of the changeable message is recommended, but provision may be made for changing the message manually.

2D-46 General Service Signs (D9-1 to 12) | II-2 (c)

On conventional highways commercial services such as gas, food and lodging are generally within sight and available to the traveler at reasonably frequent intervals along the route. Consequently, there is not expected to be much need on this class of roads for special signs calling attention to these services. Moreover, it is assumed that service signing will not be required in urban areas except for hospitals, tourist information centers and camping.

It is quite likely, however, that general service signs will be desirable or necessary where such services are infrequent, and are to be found only on an intersecting highway or crossroad. Under such conditions, States that elect to provide service signing should establish a statewide policy or warrant for its use and criteria for the availability of services, based on national guidelines. Local jurisdictions responsible for such signing should follow the State policy for the sake of uniformity.

General service signs, if used at intersections, shall carry legends for one or more of the following services: Food, Gas, Lodging, Camping, Phone, Hospital, Diesel, or Tourist Information, along with a directional message, The service legends may be either symbols or word messages, but the intermixing of symbols and word messages on one sign shall not be permitted. Formats for displaying different combinations of these services are presented in section 2F-33. | II-2 (c)

The International Symbol of Access for the Handicapped Sign (D9-6) may be used beneath General Service signs where paved ramps and restroom facilities accessible to, and usable by, the physicaly handicapped are provided.

Where the distance to the next point at which services are available is 10 miles or more, a sign NEXT SERVICES (12) MILES may be used as a separate panel mounted under the General Services sign.

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

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D9-1
24″ x 24″

D9-2
24″ x 24″

D9-3
24″ x 24″

D9-3a
24″ x 24″

D9-6
24″ x 24″

D9-8
24″ x 24″

D9-7
24″ x 24″

D9-9
24″ x 24″

D9-10
24″ x 24″

D9-11
24″ x 24″

D9-12
24″ x 24″

The Recreational Vehicle Sanitary Station sign (D9–12) may be used as needed to indicate the availability of facilities designed for the use of dumping wastes from recreational vehicle holding tanks.

In advance of roadside turnouts or rest areas, a Trash Receptacle Symbol sign (D9–4) may be placed provided it does not compete with other more important regulatory, warning, and directional signs.

All service signs, and supplemental panels, shall have reflectorized white letters, symbols and border on a reflectorized or opaque blue

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Under some circumstances, particularly for overhead signs, the available space must be considered. A sign mounted over a particular roadway lane to which it applies may have to be limited in horizontal dimension to the width of the lane, so that another sign may be placed over an adjacent lane. The necessity to maintain proper vertical clearance may place a further limitation on the size of the overhead sign and the copy that can be accommodated.

2E-8 Number of Signs at an Overhead Installation

When overhead signs are warranted, as is set forth in section 2A-22, it is desirable to limit the number of signs at these locations to only those essential in communicating pertinent destination information to the motorist. Typically, exit direction signs for a single exit and the advance guide signs will only need one panel with one or two destinations.

At other overhead locations it may be necessary to erect more than one sign to advise of a multiple exit condition at an interchange. Possibly, due to complex or unusual geometrics of the roadway, ramp, or crossing roadway, it may be necessary to provide additional panels with confirmatory messages to guide the motorist properly. However, it should be recognized that drivers have limited time to read and comprehend sign messages. In no case should there be more than three signs displayed at any one location; including regulatory or warning signs either on the overhead structure or its support.

The use of regulatory signs, such as speed limits, in conjunction with overhead guide sign installations, is not recommended.

2E-9 Amount of Legend on Expressway Guide Signs

Regardless of letter size, the legend on an expressway guide sign must be kept to a minimum. Two destinations and the directional copy are as much as most drivers can comprehend readily at high speed. For this reason, on any single major guide sign, not more than two destination names or street names ordinarily should be shown. A city name and street name on the same sign should be avoided. Directional copy, not exceeding three lines, may include symbols, route numbers, arrows, cardinal directions, and exit instructions. Where two or more signs are placed on the same supports, it is desirable to limit destinations or names to one per sign, or to a total of three in the display. Indiscriminate use of supplemental signs should be avoided (sec. 2E-28).

2E-10 Style of Lettering

The style of lettering to be used on expressway guide signs shall be one of the following two types provided in the Standard Alphabets for Highway Signs and Pavement Markings*

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

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1. Upper-case letters for all word legend; or
2. Lower-case letters with initial upper-case letters for all names of places, streets, and highways and upper-case letters for other word legend.

2E-11 Size of Lettering

Word messages in the legend of expressway guide signs shall be in letters at least 8 inches high. Larger lettering is necessary for major guide signs at or in advance of interchanges and for all overhead signs. Recommended numeral and letter sizes according to interchange classification, type of sign and component of sign legend are shown in table II-1. These sizes are to be regarded as minimums. Freeway lettering sizes (table II-2, page 2F-5) are considered applicable to expressways designed closely to freeway geometrics.

For use with lower-case letters, the initial upper-case letters shall be about 1⅓ times the "loop" height of the lower-case letters.

Lettering size on expressway signs is to be the same for both rural and urban conditions. Large easy-to-read copy is just as necessary on urban sections as on rural highways because of the more complex traffic pattern.

Table II-1 Letter and Numeral Sizes for Expressway Guide Signs

A. *Advance Guide, Exit Direction, and Overhead Signs*

	*Major**				
	*Category (a)**	*Category (b)**	*Intermediate**	*Minor**	*Overhead*
Exit Panel					
Word	10″	10″	10″	8″	10″
Numeral	15″	15″	15″	12″	15″
Letter	15″	15″	15″	12″	15″
Route Marker Interstate					
Numeral	18″				18″
Shield					
(1–2 Digit)	36″ x 36″				36″ x 36″
(3 Digit)	45″ x 36″				45″ x 36″
U.S. or State Marker					
Numeral	18″	18″	18″	12″	18″
Shield					
(1–2 Digit)	36″ x 36″	36″ x 36″	36″ x 36″	24″ x 24″	36″ x 36″
(3 Digit)	45″ x 36″	45″ x 36″	45″ x 36″	30″ x 24″	45″ x 36″
or Alternate (Ex: U.S. 56)					
Initials	15″	12″	12″	10″	12″
Numeral	18″	15″	15″	12″	15″
Cardinal Direction					
Word	15″	12″	10″	8″	12″
Name of Place, Street, or Highway					
Word	20″/15″	16″/12″	13.3″/10″	10.6″/8″	16″/12″

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together with tables of recommended letter spacing, from the Federal Highway Administration.** The initial letters and the numerals used will be Series E(M) of the Standard Alphabets for Highway Signs.

Interline and edge spacing shall be as specified in section 2E–12.

Abbreviations may be used but should be kept to a minimum. The provisions of sections 2A–14 and 2E–12 shall apply.

Table II–2 Letter and Numeral Sizes for Freeway Guide Signs

A. *Advance Guide, Exit Direction, and Overhead Signs*

	*Major**				
	*Category (a)**	*Category (b)**	*Inter-mediate**	*Minor**	*Overhead*
Exit Panel					
Word	10″	10″	10″	10″	10″
Numeral	15″	15″	15″	15″	15″
Letter	15″	15″	15″	15″	15″
Interstate Route Marker					
Numeral	24″ | 18″				18″
Shield					
(1–2 Digit)	48 x 48 | 36 x 36				36″ x 36″
(3 Digit)	60 x 48 | 45 x 36				45″ x 36″
U.S. or State Marker					
Numeral	24″ x 18″	18″	18″	12″	18″
Shield					
(1–2 Digit)	48 x 48 | 36 x 36	36″ x 36″	36″ x 36″	24″ x 24″	36″ x 36″
(3 Digit)	60 x 48 | 45 x 36	45″ x 36″	45″ x 36″	30″ x 24″	45″ x 36″
or Alternate (Ex: U.S. 56)					
Initials	15″	15″ | 12″	12″	10″	12″
Numeral	18″	18″ | 15″	15″	12″	15″
Cardinal Direction					
Word	15″	15″ | 12″	12″	8″	12″
Name of Place, Street, or Highway					
Word	20″/15″	20″/15″	16″/12″	13.3″/10″	16″/12″
Distance					
Numeral	18″	18″ | 15″	15″	12″	15″
Fraction	12″	12″ | 10″	10″	8″	10″
Word	12″	12″ | 10″	10″	8″	10″

* See Section 2E–23 Interchange Classification.

Note: (|) Vertical bar signifies separation of desirable and minimum sizes.

(/) Slanted bar signifies separation of upper-case and lower-case alphabets.

B. *Gore Signs*

At major and intermediate interchanges	
Word	12″
Numeral & Letter	18″
At minor interchanges	
Word	8″
Numeral & Letter	10″

** Available from the Federal Highway Administration (HTO–20) Washington D.C. 20590.

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TABLE II-2 Letter and Numeral Sizes for Freeway Guide Signs—Cont.

C. *Pull Thru Signs*	
Destination Message	
Word	16″/12″
Route Marker as Message	
Cardinal Direction	12″
Route Marker	36″×36″
D. *Supplemental Guide Signs*	
Exit Number	
Word	10″
Numeral	15″
Letter	15″
Place name	13.3″/10″
Action message	10″
E. *Variable Message Signs***	
Place name	13.3″/10″
Advisory message	13.3″/10″
Action message	
Word	10″
Numeral	10″
Warning & Regulatory	see Standard Highway Signs booklet for sizes.***

**Variable message signs may often require larger legends or the use of all capital letters. The sizes shown here are minimum and larger sizes may be used depending on needs.

***Available from the Federal Highway Administration (HT0-20) Washington, D.C. 20590

F. *Interchange Sequence Signs*	
Word	13.3″/10″
Distance Numeral	13.3″
Fraction	10″
G. *"Next—Exits" Signs*	
Place name	13.3″/10″
NEXT—EXITS	10″
H. *Distance Signs*	
Word	8″/6″
Numeral	8″
I. *General Motorist Services Signs*	
Exit Number	
Word	10″
Number	15″
Letter	15″
Services	10″
J. *Rest Area and Scenic Area Signs*	
Word	12″
Distance	
Numeral	15″
Fraction	10″
Word	12″

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Table II-2 Letter and Numeral Sizes for Freeway Guide Signs—Continued

Action Message	
Word	12″
K. *Mileposts*	
Word	4″
Numeral	10″
L. *Boundary and Orientation Signs*	
Word	8″/6″
M. "Next Exit" and "Next Services" Signs	
Word	8″
Numeral	8″
N. *"Exit Only"*	
Word	12″
O. *Diagrammatic Signs*	
Lane width	5″
Lane lines	1″ x 6″
Vertical space between lane lines	6″
Stem height (up to the upper point of departure)	30″
Arrowhead—(standard "up" arrow)	
Space between arrowhead and route shield	12″

2F-12 Sign Borders

Signs shall have a border of the same color as the legend, to outline their distinctive shape and thereby give them easy recognition and a finished appearance. For guide signs larger than approximately 10 feet by 6 feet, the border should have a width of approximately 2 inches. For smaller guide signs, a width of approximately 1¼ inches may be used, but the width should not generally exceed the stroke width of the major lettering on the sign.

Corner radii of sign borders should be approximately one-eighth of the minimum dimension on guide signs, except that the radii should not exceed 12 inches on any sign. The sign area outside the corner radius need not be trimmed.

2F-13 Color, Reflectorization, and Illumination

Color, reflectorization and illumination of freeway guide signs shall conform to the provisions for expressway guide signs set forth in sections 2E-5 and 2E-6. In addition, the background of all overhead signs that are not independently illuminated shall be reflectorized. When a sign is internally illuminated the requirements for reflectivity do not apply.

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Technological developments have produced a variety of types of illumination for highway signs. Internally illuminated signs, having translucent faces, are especially effective for freeway use. Their use may be justified for some installations. Where internal illumination is used, the sign colors shall appear essentially the same by night and by day.

2F-14 Sign Arrows

The design and application of arrows for freeway guide signs shall be the same as that specified in section 2E-15 for expressway signs. Dimensional details for "Up" and "Down" arrows are shown in the appendix of the Standard Highway Signs booklet.*

2F-15 Viewing Factors

The requirements set forth in section 2E-16 concerning placement of signs for effective viewing shall apply to freeway signing.

2F-16 Vertical Clearance

In ground installations, directional guide signs shall, except as noted below, be erected at a minimum height of 7 feet above the edge of the pavement to the bottom of the sign. If a sign is mounted below another sign, the major sign shall be at least 8 feet and secondary sign at least 5 feet above the level of the pavement edge.

When signs are positioned a significant distance away from the pavement edge to increase roadside safety, the vertical clearance on such signs may be reduced to 5 feet above the pavement edge. Notwithstanding the above, all regulatory and warning signs and route markers shall be at least 6 feet above the level of the pavement edge.

Overhead signs shall have a vertical clearance of not less than 17 feet to the sign, light fixture, or sign bridge, over the entire width of the pavement and shoulders, except that where a lesser vertical clearance is used for design of other structures the vertical clearance to overhead signs, light fixtures, or sign bridges need not be greater than one foot in excess of the clearance at other structures. In special cases it may be necessary to reduce the vertifical clearance still further because of substandard dimensions in tunnels and other major structures such as double-deck bridges.

2F-17 Horizontal Clearance

To provide a roadside recovery area for out-of-control vehicles, liberal horizontal clearances should be provided for roadside signs and overhead sign supports. No specific minimum clearance is established, but in no case shall any part of the sign or sign structure, which is within the applicable vertical clearance dimension and which is exposed to traffic,

*Available from the Federal Highway Administration (HTO-20) Washington, D.C. 20590

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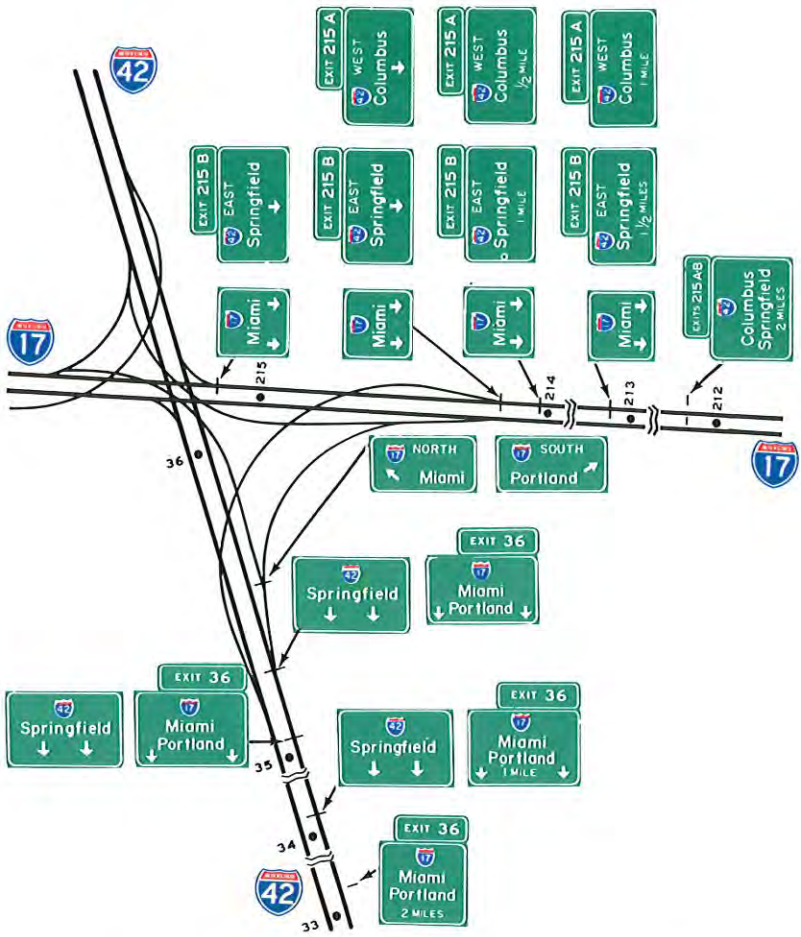

Figure 2-27. Split without optional lane having off route to right.

2F-24 Diagrammatic Signs (figs. 2–28 through 2–32, 2–35)

Diagrammatic signs are guide signs that show a graphic view of the exit arrangement in relationship to the main highway. Use of such guide signs have been shown to be superior to conventional guide signs for some interchanges.

Diagrammatic signs should be used at the advance guide sign locations for left exits (fig. 2–32) and for some interchanges in sections 2F–23 and 2F–25. They should be used for splits having off-route movements to the left (fig. 2–28), optional lane splits (fig. 2–29), exits with route discontinuity (fig. 2–31) and left exit lane drops (fig. 2–35). Diagrammatic signs may be used at two-lane exits with an optional lane (fig. 2–30).

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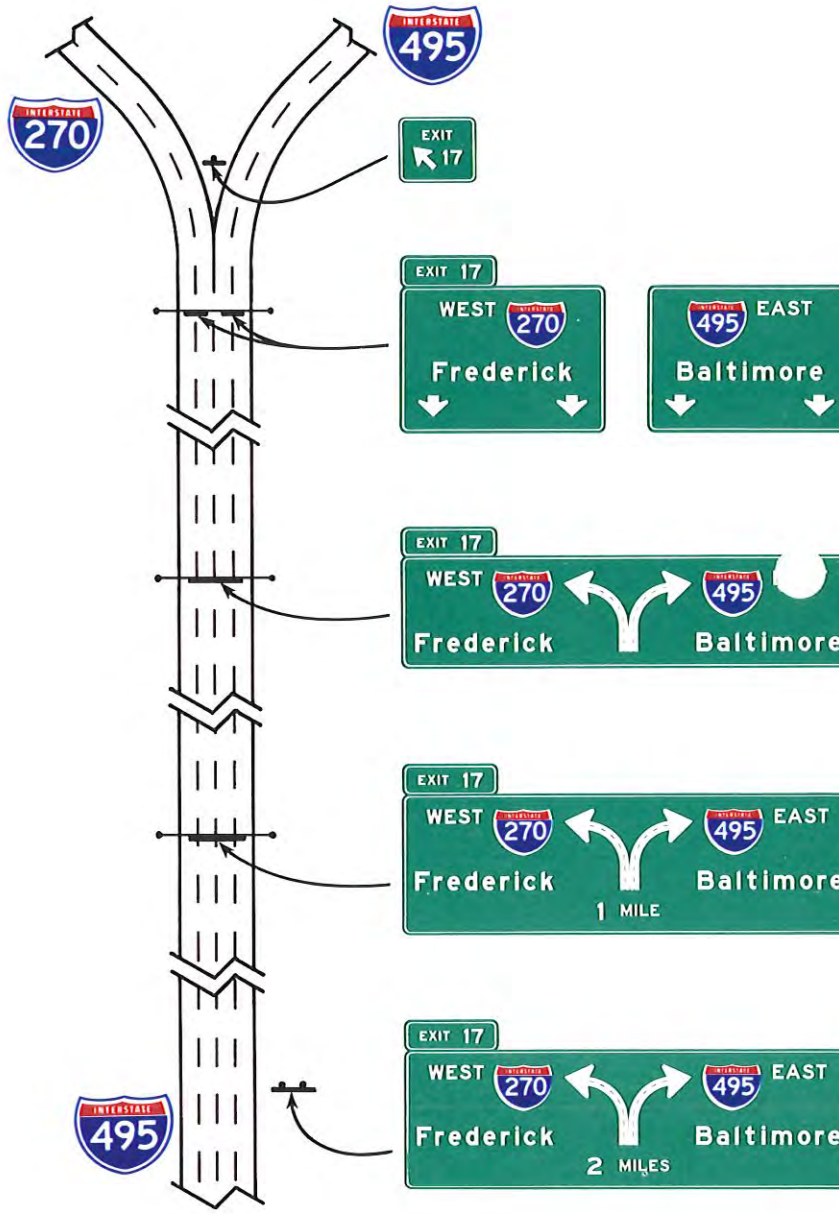

Figure 2-28. Split without optional lane having off route to left.

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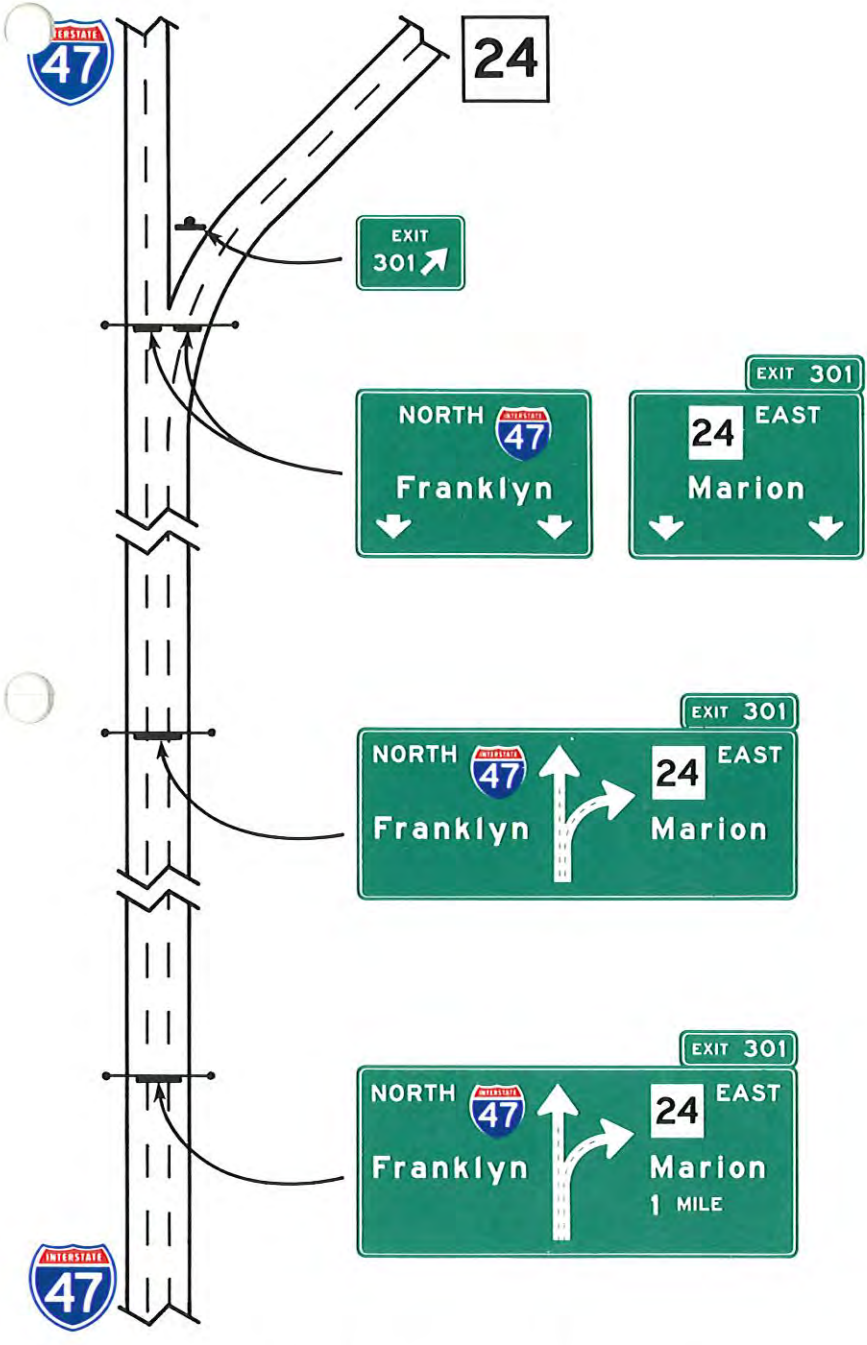

Figure 2-30. Two-lane exit with optional lane.

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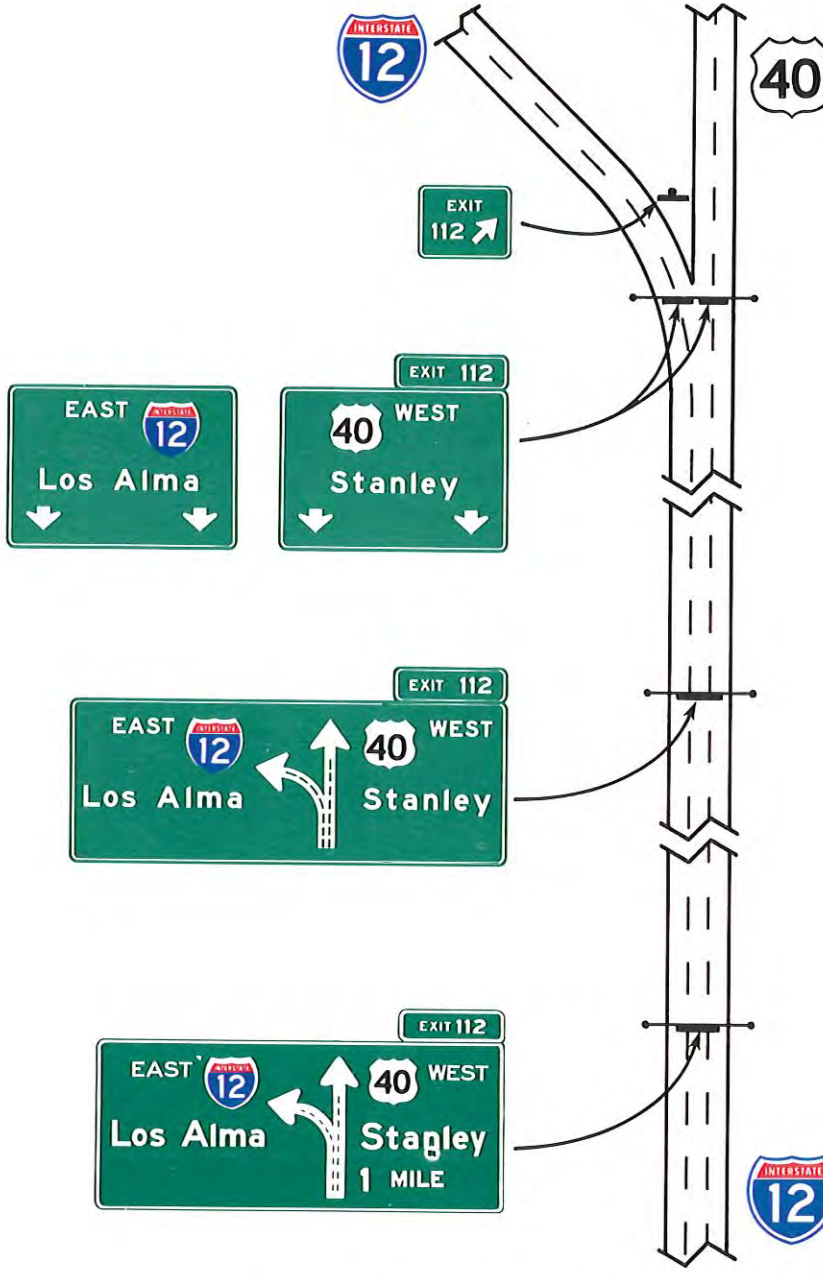

Figure 2-31. Two-lane exit with optional lane and route discontinuity.

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2F-29 Diamond (fig. 2-39)

The signing layout for all interchanges having only one exit ramp in the direction of travel should be similar, regardless of the interchange type (figs. 2-37 through 2-40). The singular message EXIT shall be used on advance guide and exit direction signs. Exit numbers shall not include the cardinal initials corresponding to the direction of the cross route.

The typical diamond interchange ramp departs from the mainline roadway such that a speed reduction generally is not necessary in order for a driver to safely negotiate an exit manuever from the mainline into the ramp roadway. When this is the case an exit speed sign should not be used. A Stop Ahead or Signal Ahead warning sign may be placed, where an engineering study indicates a need, along the ramp in advance of the cross street to give notice to the driver so that a safe stop may be made. When used, these signs should be used in pairs with one sign on each side of the ramp for two lane ramps and singly for one lane ramps.

When a ramp departs from the mainline and when there is a curve present that will cause a significant speed reduction, an Exit Speed sign may be posted based on an engineering study. The Exit Speed sign should then be located along the deceleration lane or along the ramp such that it is visible to the driver far enough in advance so that a safe slowing and exiting maneuver may be made.

2F-30 Urban Diamond (fig. 2-40)

In urban areas, street names are often shown as the principal message in destination signs. If interchanges are too closely spaced to properly locate the advance guide signs, they may be placed closer to the exit, and the mileage figures adjusted accordingly. Where two or more serve the same community, the Community Interchanges Identification sign is useful in helping motorists make a choice of exits. The signing layout is as shown in figure 2-40, (page 2F-31).

2F-31 Closely Spaced Interchanges (fig. 2-41)

When a series of interchanges is closely spaced, the advance guide sign for the next interchange should be mounted on an overhead structure located downstream from the gore of the preceding interchange. Information for more than one interchange shall not be shown on such signs.

Interchange sequence series signs should be used. When used, they should identify and show street names and distance for the next three exits, as shown in figure 2-41 (page 2F-32).

2F-32 Minor Interchange (fig. 2-42)

A lower standard of signing is prescribed for a minor interchange because such an interchange customarily serves low volumes of local traffic only. The size of messages to be used is shown in table II-2 (page 2F-5).

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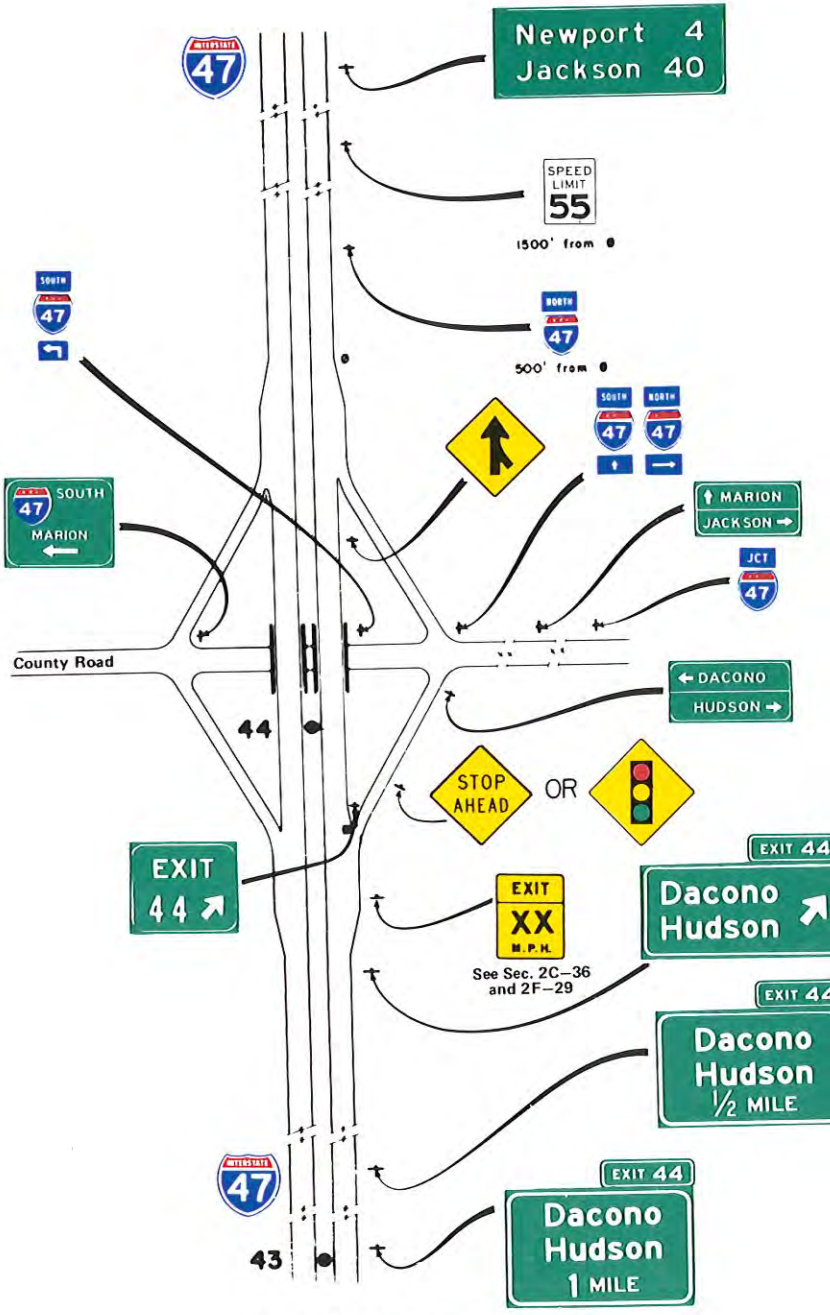

Figure 2-39. Diamond interchange.

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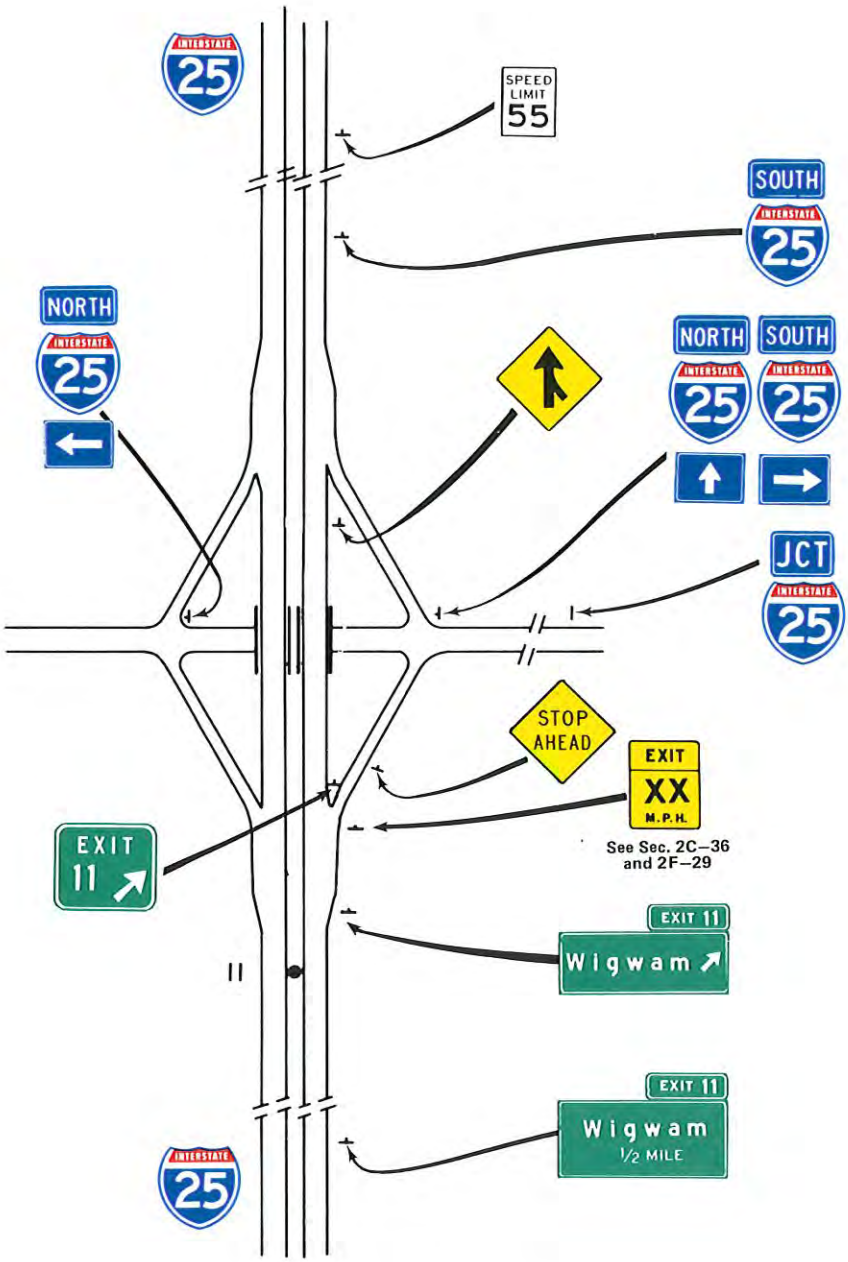

Figure 2-42. Minor interchange.

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minor interchange, as shown in figure 2–42. An exit direction sign should also be used.

2F–33 Signing for General Motorist Services (fig.2–43)

Although there are no commercial services available to the traveler between interchanges it is expected that adequate fuel, motor services, food service and lodging will be available near most major interchange sites. It is also assumed that service signing will not be required in urban areas. However, on those rural sections where such services are infrequent, the driver will need information to enable him to plan his stops. Interchange numbers may be shown on service signs as shown in figure 2–43. Action messages may be EXIT ¼ MILE or EXIT 1 MILE, etc. (see sec. 2E–37 and fig. 2–21, page 2E–22).

Only sevices that adequately serve the needs of the freeway motorist should be shown. Where services are not within sight of the interchange, the road authority shall repeat the service signing in smaller size, on the intersecting highways, with arrows indicating the direction to the services. Distances to services not within the immediate interchange area should be shown. All approved symbols shall be permitted as alternates to word messages wherever motorist shall be permitted as alternates to word messages wherever motorist service signs are used, but intermixing of symbols and word legends shall not be permitted. Service signing should only be provided at interchanges where the motorist can return to the freeway and continue in the same direction of travel.

Where road authorities elect to provide service signing, there should be a statewide policy for such signing and criteria for the availability of the various types of services. The criteria should include the following:

1. *Gas and/or Diesel (and associated services)* | II-2 (c)
   a. Vehicle services such as fuel, oil, lubrication, tire repair and water.
   b. Restroom facilities and drinking water.
   c. Continuous operation at least 16 hours per day, 7 days a week.
   d. Telephone.
2. *Food*
   a. Licensing or approval, where required.
   b. Continuous operation to serve 3 meals a day, 7 days a week.
   c . Telephone.
3. *Lodging*
   a. Licensing or approval, where required.
   b. Adequate sleeping accommodations.
   c. Telephone.
4 . *Telephone*
   a. Continuous operation, 7 days a week.

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Figure 2–43. Motorist services signs.

5. *Hospital*
   a. Continuous emergency care capability, with a doctor on duty 24 hours a day, 7 days a week. A doctor on duty would include the following criteria and should be signed in accordance with the priority as follows:
      (1) Physician on duty within the emergency department.
      (2) Registered nurse on duty within the emergency department, with a physician in the hospital on call.

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(3) Registered nurse on duty within the emergency department, with a physician on call from his office or home.

6. *Camping*
   a. Licensing or approval where required.
   b. Adequate parking accommodations.
   c. Modern, sanitary facilities and drinking water.
   d. Signs to be removed if operated on a seasonal basis only.

The service sign shall be mounted in an effective location, between the advance guide sign and the exit direction sign, in advance of the exit leading to the services available and should contain the interchange number. If the distance to the next point where services are available is greater than 10 miles, a sign "Next Services (xx) Miles" shown in figure 2–43, may be used as a separate panel mounted under the exit direction sign.

Freeway signs for services shall conform to the provisions for general motorist service signs covered in sections 2D–46, 2E–37 and as specified herein. Letter and numeral sizes for freeway design are given in table II–2. No more than six general motorist services are to be displayed on one sign (including appended panel). The qualified services available should be shown at specific locations on the sign, and the sign space normally reserved for a given service symbol or word is to be left blank when that service is not present, to provide flexibility for the future when the service may become available. II-2 (c)

The standard display of word messages recommended is FOOD and PHONE in that order on the top line, and GAS and LODGING on the second line. Where used, HOSPITAL and CAMPING should be on separate lines. Signing for DIESEL fuel service may be substituted for any of the General Motorist Services or appended to such signs. The International Symbol of Access for the Handicapped sign (D9–6) may be used for facilities that qualify (sec. 2D–46). II-2 (c)

When symbols are used for the motorist services they should be displayed as follows:

6 Services

1. TOP ROW—GAS, FOOD, and LODGING
   BOTTOM ROW—PHONE, HOSPITAL, and CAMPING

4 Services

2. TOP ROW—GAS and FOOD
   BOTTOM ROW—LODGING and PHONE

3 Services

3. TOP ROW— GAS, FOOD, and LODGING

Substitutions of other services for any of the services shown above may be made by placing the substitution in the lower right (2) or extreme right (3) portion of the panel. An action message or an interchange number may be used as they are used for word message signs. The diesel fuel symbol (D9–11), may be substituted for the symbol representing gas or appended to such assemblies. The information symbol may be substituted on any of the above configurations. II-2 (c)

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At rural interchange areas where limited motorist services are available and where it is unlikely that additional services will be provided within the near future, a panel having one to three services (words or symbols) may be appended to ground mounted interchange guide signs. Should additional services become available at such locations in the future, the appended sign panel shall be removed and replaced with an independently mounted motorist service sign as described above. When sign panels are appended, the requirements of sections 2A-23 and 2F-17 shall apply.

A separate telephone service sign (sec. 2D-46) may be erected when telephone facilities are located adjacent to the freeway at places where telephones would not normally be expected.

The Recreational Vehicle Sanitary Station sign (D9-12) may be used as needed to indicate the availability of facilities designed for the use of dumping wastes from recreational vehicle holding tanks.

In some locations, signs may be useful to indicate that services are not available.

2F-34 Specific Services Information

In addition to the general motorist service signs, State policy may precribe the use of special panels or displays to provide motorists with specific services information, according to the national criteria for such postings given in the Code of Federal Regulation 23 CFR 655C.*

Specific information signs should be located so as to be readable from the main traveled way approaching an interchange, giving the name, brand or trademark of the services available at that interchange. When services providing gas also provide diesel fuel the business logo may include a suitable designation of that additional service. | II-2 (c)

Combination type specific service information signs may be used in remote rural areas of the Interstate System in accordance with the following criteria:

1. The combination of specific service signing using business logos will include GAS, FOOD, LODGING, and CAMPING. Only two services shall appear on a combination sign. A maximum of two logos may appear below each respective service. If all four services are available, GAS and FOOD should be combined on one sign, and LODGING and CAMPING should be combined on the other sign.
2. When the number of business facilities at a rural interchange are increased to more than two for one or more services, existing combination service signing must be removed and replaced with sign panels dedicated to each service.
3. Installation distances in advance of interchange exits should follow established standard requirements for specific service signing.

If additional services are anticipated for any of the services in the near future, combined specific service signs should not be used.

* National Standards for Specific Information Signs, FHPM 6-8-3-8.

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2F-35 Rest and Scenic Area Signs (fig. 2-44)

On the approach to rest areas, an advance guide sign shall be placed one mile or two miles in advance of the rest area. If the rest area has facilities for the physically handicapped (sec. 2D-46), the International Symbol of Access for the Handicapped Sign (D9-6) may be placed with or beneath the advance rest area sign. Between the advance guide sign and the gore of the rest area exit, there may be a sign reading REST AREA which shall carry either an arrow or the words NEXT RIGHT as a part of the message. Sn-95 5-21-75 Vol. VI

At the rest area exit gore, there shall be a sign with a message REST AREA together with an arrow indicating the appropriate turn as shown in figure 2-44. A roadside area that does not contain restroom/toilets should be signed to indicate the major motorist service provided. An area with only parking would be signed PARKING AREA. An area with picnic tables and parking would be signed PICNIC AREA. All signs for rest areas shall have reflectorized white letters, symbols, and borders on a blue background. II-6 (c)

Rest areas that have tourist information and welcome centers should be signed as discussed in section 2F-36. II-6 (c)

Figure 2-44. Freeway rest area gore sign.

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The criteria for signing for radio-weather information is as follows:

1. Radio-Weather Information signs shall have a white legend and border on a blue background.
2. Only the numerical indication of the radio frequency shall be used to identify a station broadcasting weather travel information.
3. A maximum of four frequencies may be shown on each sign.
4. The radio station should have a signal strength to adequately serve 70 miles along the roadway.
5. Signs should be spaced according to needs, but ordinarily not closer than 30 miles apart for each direction of travel.
6. A particular radio frequency may be shown a maximum of twice in one direction along the main line.
7. Only radio stations whose signal will be of value to the traveler and who agree to carry the two items below are to be identified on weather information signs.

   a. Periodic weather warnings at no more than 15 minute intervals during periods of adverse weather.

   b. Road condition information affecting the roadway being traveled once every half hour when required, supplied by an official agency having jurisdiction.
8. The stations to be included on the signs should be selected in cooperation with the association(s) representing major broadcasting stations in the area to provide (1) maximum coverage to all motorists on both AM and FM frequencies and (2) consideration of 24 hours a day, 7 days a week broadcast capability.
9. Additional criteria may be developed by individual states.
10. If a station to be considered operates only on a seasonal basis, its signs shall be removed or covered during the off-season.

For roadway rest area locations a smaller sign using a greater number of radio frequencies but of the same general design may be used. Rest area signs shall not be erected as to be visible from the main roadway.

D12-1

D12-2

2F-37.1 Carpool Information Signing

In urban areas having carpool matching services it is considered in the public interest to permit the use of carpool information signs (D12–2)

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not only adjacent to preferential lanes but along any urban highway. As this is an information sign related to motorist services it should have a white legend on a blue background as defined in section 2A-11.

2F-38 Weigh Station

Weigh station signing on freeways shall be the same as that specified in section 2D-45, except for lettering size and the advance posting distance for the Exit Direction sign, which shall be located 1500 feet in advance of the gore. The recommended sign layout for freeway applications are shown in the Standard Highway Signs booklet.*

2F-39 Milepost Markers

Milepost signs shall be placed on all freeway facilities and shall conform to the general provisions for mileposts contained in section 2D-47. Markers shall contain 10-inch white numerals on 12-inch wide vertical green panels with a white border. Panels shall be 24, 36, or 48 inches in length for one, two, or three digits, respectively, and contain the word MILE. Milepost markers may be placed up to 30 feet from the edge of the pavement. Milepost markers located in line with delineator posts shall have the bottom of the marker at the same height as the delineator. The distance numbering shall be continuous for each route within any State except where overlaps occur. With overlapped routes, continuity shall be established for one of the routes which should also have continuity in the interchange exit numbering (sec. 2F-19). On the route without milepost continuity, the first marker beyond the overlap should be such as to indicate the total distance traveled on the route so that a motorist may have a means of correlating his travel distance between mileposts with that shown on his odometer.

2F-40 Route Markers and Trailblazers (figs. 2-45, 2-46)

As in the case of expressways (sec. 2E-20), route markers on freeways will ordinarily be incorporated as shields or other distinctive shapes into large directional guide signs. The use of independent markers on freeways will be limited primarily to route confirmation assemblies as shown in figures 2-36, 2-37, and 2-40.

The official route marker for the Interstate Highway System is the red, white and blue reflectorized distinctive shield adopted by AASHTO on August 14, 1957. Where the Interstate shield is displayed in an assembly or on the face of a guide sign with U.S. or State route markers, the Interstate numeral should be at least equal in size to these other route markers. The Interstate shield shall be fully reflectorized and shall conform to the standards set forth in the Standard Highway Signs booklet.*

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

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FOR GUIDE SIGN USE

FOR INDEPENDENT USE

Figure 2-45. Typical shields.

FOR GUIDE SIGN AND INDEPENDENT USE

SPUR

Figure 2-46. Interstate Shields and Off-Interstate markers.

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The standard trailbazer assembly (sec. 2D-33) will usually have application on roads leading to a freeway. Where there are gaps between completed sections of a freeway route, the trailblazer assembly should be used to indicate the best routing between the termini of the completed sections.

The commonly used name or trailblazer symbol for a toll facility may be displayed on free sections of the Interstate System at:

1. The last exit before entering a toll section of the Interstate System;

2. The interchange or connection with a toll facility, whether or not the toll facility is a part of the Interstate System; and

3. Other locations within a reasonable approach distance of toll facilities when the name or trailblazer symbol for the toll facility would provide better guidance to drivers unfamiliar with the area than would place names and route numbers.

The toll facility name or marker may be included as a part of the guide sign installations on interstecting highways and approach roads to indicate the interchange with a toll section of an Interstate highway. Where needed for the proper direction of traffic, a trailblazer for a toll facility that is part of the Interatate System may be displayed with the Interstate trailblazer assembly.

2F-41 Miscellaneous Freeway Guide Signs

Certain other guide signs, in addition to those previously discussed, may be used on freeways if they do not interfere with signing for interchanges or other critical points. These include the types described in sections 2E-39 and 42.

Supplemental guide signs with a white legend and border on a brown background may be used when a park or recreational area is being signed as a significant destination for users of the Interstate and other freeway systems. The same color combination can be used for advance guide and exit direction signs for an interchange where the crossroad leads exclusively to a park or recreational area.

Where the crossroad is a numbered route or leads to other destinations, the advance guide and exit direction signs shall retain the white on green color combination. All gore signs shall remain with a white legend on a green background. The background color of interchange exit number panels shall match the color of the guide sign proper.

2F-42 Signing on Freeway Approaches

Freeway signing standards may have to be extended to the approach roads for some of the major interchanges. Frontage roads need not be signed to freeway standards, but otherwise should be consistent with requirements for roadways of their particular class.

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may be used where edge delineation is desirable to reduce driving on paved shoulders or refuge areas of lesser structural strength than adjacent pavement. Edge lines shall not be continued through intersections and should not be broken for driveways.

Edge lines shall be provided on all Interstate highways, on rural multilane divided highways, and may be used on other classes of roads. The lines shall be white except that on the left edge of each roadway of divided streets and highways, and one-way roadways in the direction of travel, they shall be yellow. III-6 (c)

3B-7 Pavement Marking Extensions Through Intersections or Interchanges

Where road design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an interchange or intersection, (such as at offset, skewed, complex multi-legged intersections or where multiple turn lanes are used) a dotted line may be used to extend markings as necessary through the interchange or intersection area (figs. 3-9a, 3-11). Where a greater degree of restriction is required, solid lane lines or channelizing lines may be continued through intersections. A frequent use for the channelizing line is to separate turning movements (figs. 3-9b, 3-9c).

3B-8 Lane Reduction Transitions

Where pavement markings are used, lane reduction markings shall be used to guide traffic at points where the pavement width changes to a lesser number of through lanes. No-passing markings shall be used to prohibit passing in the direction of the convergence, throughout the transition area. The length of transition (taper length) for a lane reduction should be computed by the formula $L = WS$ for freeways, expressways, and all other roadways having a posted speed of 45 m.p.h. or greater. The formula $L = WS^2/60$ should be used to compute taper length on urban, residential, and other streets where the posted speeds are 40 m.p.h. or less. Under both formulas, L equals the taper length in feet, W the offset distance in feet, and S the off-peak 85 percentile speed in miles per hour. On new construction, where no 85 percentile speed is established, the design speed may be used.

A number of situations are possible, as illustrated in figure 3-10, depending on which lanes must be offset or terminated and the amount of offset. One or more lane lines must be discontinued, and the remaining center and lane lines must be connected in such a way as to merge traffic into the reduced number of lanes.

Lane lines should be discontinued one-quarter of the distance between the Pavement Width Transition sign (sec. 2C-19) and the point of convergence. Edge lines should be installed from the location of the warning sign, past the beginning of the narrower roadway (fig. 3-10).

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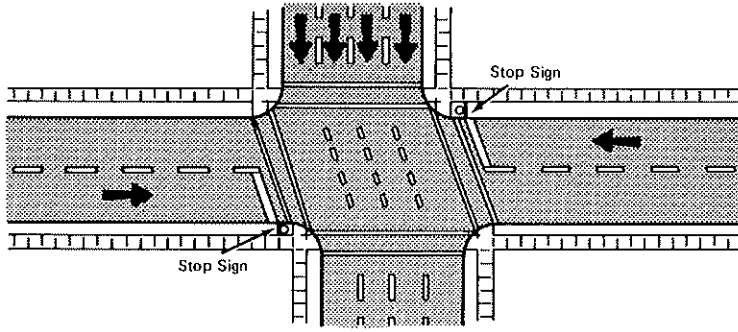
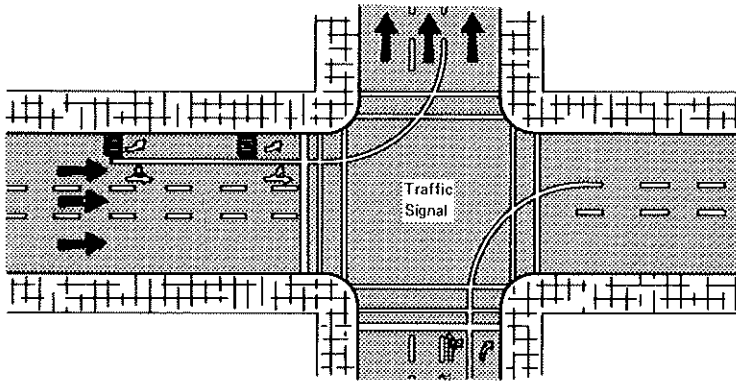
a—Typical pavement marking with offset lane lines continued through the intersection and optional crosswalk lines and stop limit lines.



b—Typical pavement marking with optional double turn lane lines, pavement messages, crosswalk lines, and stop limit lines.



c—Typical pavement marking with optional turn lane lines, crosswalk lines, and stop limit lines.

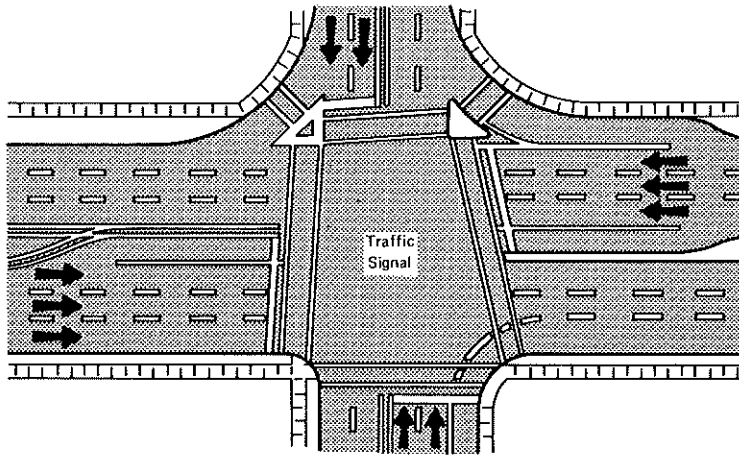


Figure 3-9. Typical pavement marking applications.

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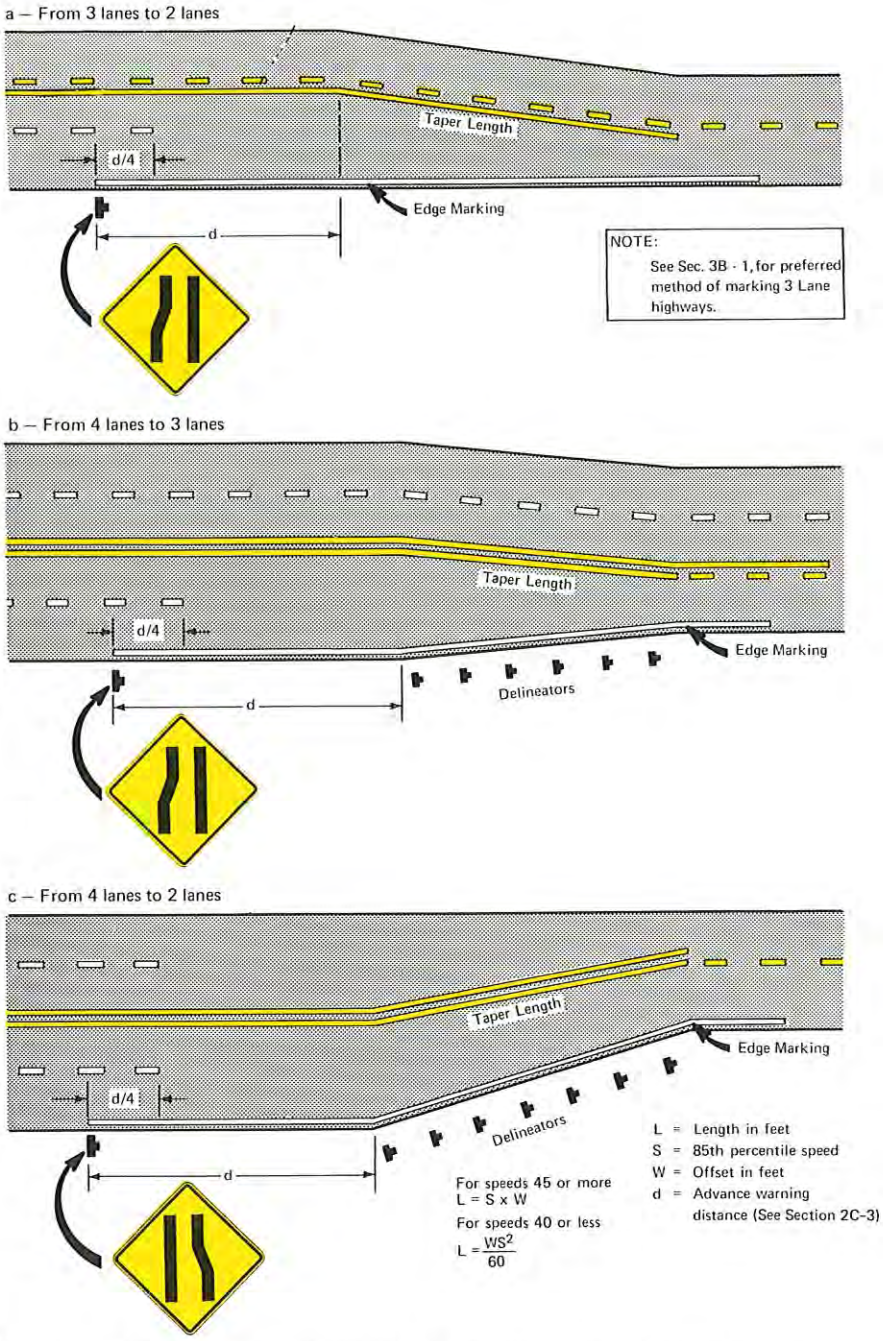

Figure 3-10. Typical pavement-width transition markings and signs.

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Pavement markings at pavement-width transitions supplement the standard signs.

3B-9 Channelizing Line

The channelizing line shall be a wide or double solid white line.

The channelizing line may be used to form traffic islands where travel in the same direction is permitted on both sides. Other markings in the island area such as crosshatching shall be white.

Typical examples of channelizing line applications are shown in figures 3-9, 3-11, 3-12 and 3-13.

3B-10 Median Islands Formed by Pavement Markings

Two double solid yellow lines shall be used to form continuous median islands where these islands separate travel in opposite directions. Other markings in the median island area such as crosshatching shall be yellow (sec. 3A-8).

3B-11 Marking of Interchange Ramps

Channelizing lines at exit ramps provide a neutral area which reduces the probability of collision with the curb nose and also directs exiting traffic at the proper angle for smooth divergence into the ramp (fig. 3-11). The channelizing line promotes safe and efficient merging with the through traffic at entrance ramps (fig. 3-12).

For exit ramps, channelizing lines should be placed along both sides of the neutral area between the main roadway and the exit ramp lane. With a parallel deceleration lane, a lane line should be extended from the beginning of the channelizing line upstream for a distance of approximately one-half the length of the full width deceleration lane. White transverse markings may be placed in the neutral area for special emphasis.

For entrance ramps, a channelizing line should be placed along the side of the neutral area adjacent to the ramp lane. With a parallel acceleration lane, a lane line should be extended from the end of the channelizing line for a distance approximately one-half the length of the full width acceleration lane. With a tapered acceleration lane, a lane line may be placed to extend the channelizing line, but not beyond a point where the tapered lane meets the near side of the through traffic lane.

3B-12 Combination Lane and Center Line Markings for Unique Applications

It is sometimes necessary to use markings in certain combinations not previously described for special applications intended to improve traffic operations.

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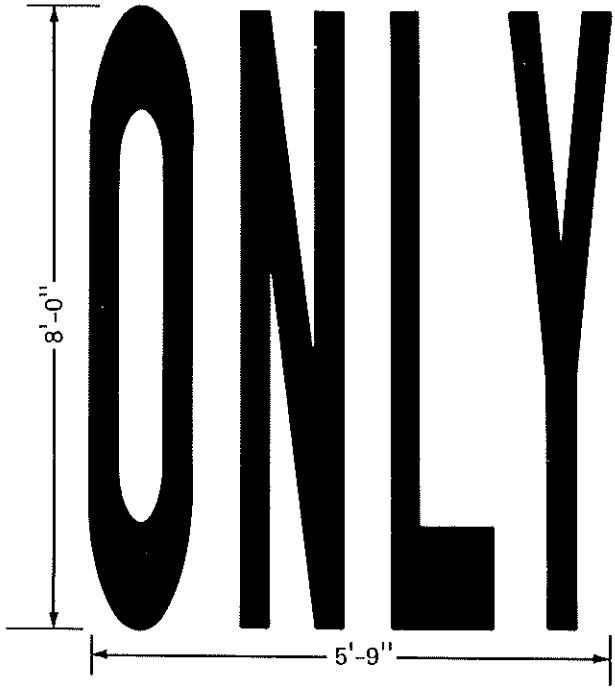

Figure 3-17. Elongated letters for pavement marking.

When signs are not used, intended meaning should be stenciled on the curb.

Signs shall always be used with curb markings in those areas where curb markings are frequently obliterated by accumulations of snow and ice.

3B-19 Preferential Lane Markings

When a lane is assigned full or part time to a particular class or classes of vehicles, the preferential lane markings shall be used.

The marking is intended to convey that a restriction on the class or classes of vehicles permitted to use the lane exists, and it is supplemental to signs or signals conveying the specific restrictions. Signs or signals shall be used with the preferential lane markings.

The preferential lane marking shall be the elongated diamond detailed in the Standard Alphabets for Highway Signs and Pavement Markings.* The diamond shall be formed by white lines at least 6 inches

* Available from FHWA (HTO-20), Washington, D.C. 20590.

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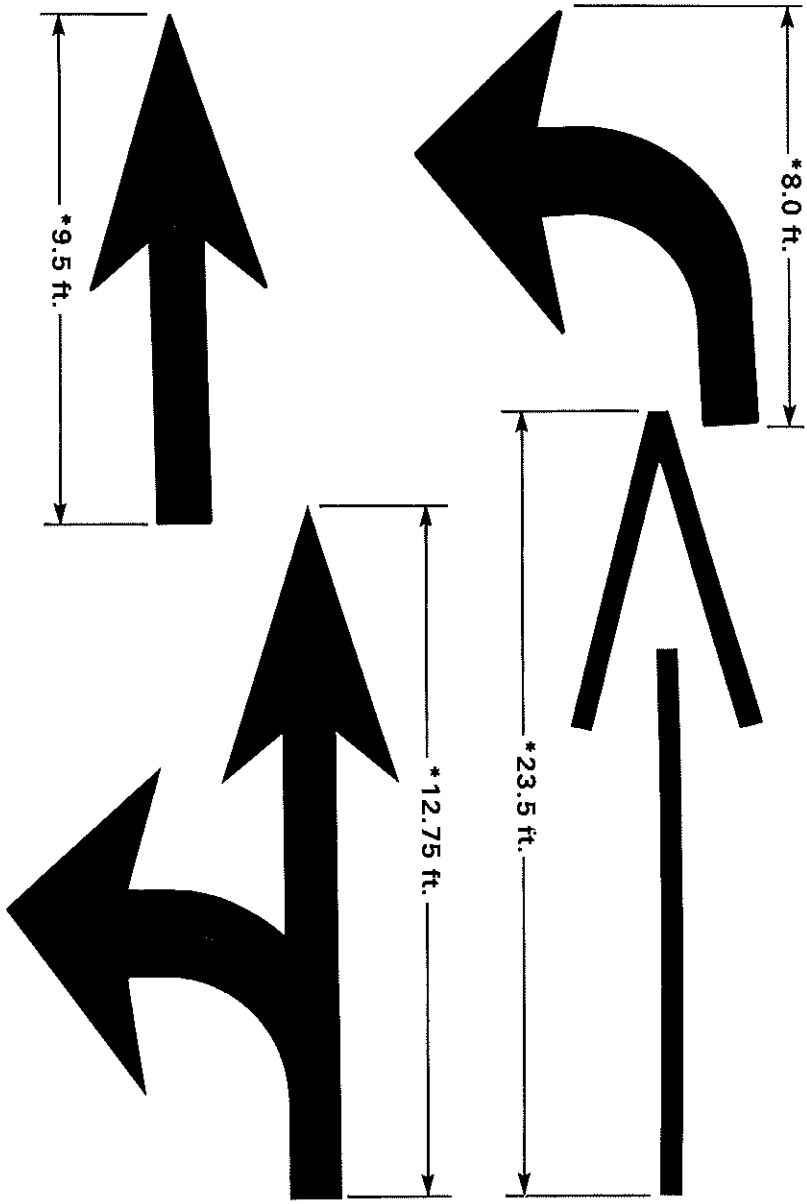

* Minimum sizes for normal installation; larger sizes may be needed for freeways, above average speeds, and other critical conditions. For proper proportion, see Standard Alphabets for Highway Signs and Pavement Markings (available from FHWA, HTO-20, Washington, D.C. 20590).

Figure 3-18. Elongated arrows for pavement markings.

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III–1 shows suggested spacing for delineators at horizontal curves.

Table III–1 Suggested Spacing for Highway Delineators on Horizontal Curves

(Distance in Feet Rounded to the Nearest 5 Feet)

Radius of Curve (in feet)	Spacing on Curve (in feet) (S)
50	20
150	30
200	35
250	40
300	50
400	55
500	65
600	70
700	75
800	80
900	85
1,000	90

Spacing for specific radii not shown may be interpolated from table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula $S = 3\sqrt{R-50}$.

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W20–1
48" x 48"

6B–16 Advance Detour Sign (W20–2)

The Advance Detour sign is intended for use in advance of a point at which traffic is diverted over a temporary roadway or route. It carries the legend DETOUR (1500) FT or DETOUR (1/2) MILE. It may be used with repetition with appropriate legends or in conjunction with other construction signs.

W20–2
48" x 48"

W20–3
48" x 48"

6B–17 Advance Road (Street) Closed Sign (W20–3)

The Advance Road (Street) Closed sign is intended for use in advance of a point at which a roadway is closed to all traffic or to all but local traffic. It carries the legend ROAD (STREET) CLOSED (1000) FT or ROAD (STREET) CLOSED (1/4) MILE. It may be used in repetition with appropriate legends or in conjunction with other construction signs.

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6B–18 Advance One Lane Road Sign (W20–4)

The Advance One Lane Road sign is intended for use only in advance of a point where traffic in both directions must use a single lane (secs. 6F–6 and 7). It carries the legend ONE LANE ROAD (1000) FT or ONE LANE ROAD (¼)MILE. It may be used in repetition with appropriate legends or in conjunction with other construction signs.

If the one-lane stretch is of such length as not to be visible throughout from either end, or if the traffic is of such volume that simultaneous arrivals at both ends occur frequently, provision must be made to permit traffic to more alternately under control (secs. 6F–6 to 6F–10).

W20–4
48" x 48"

W20–5
48" x 48"

W20–7a
36" x 36"
Supplemental Plate
24" x 18"

6B–19 Advance Lane Closed Sign (W20–5)

The Advance Lane Closed sign is intended for use where applicable in advance of a point where one lane of a multiple-lane roadway is closed (sec. 6G–3). It carries the legend RIGHT (LEFT) LANE CLOSED (1000) FT or RIGHT (LEFT) LANE CLOSED (¼) MILE. It may be used in repetition with appropriate legends or in conjunction with other construction signs.

6B–20 Advance Flagger Sign (W20–7)

The Advance Flagger sign is intended for use in advance of any point at which a flagger has been stationed to control traffic through a construction or maintencance project. It carries the flagger symbol. When needed, an appropriate distance message may be displayed on a supplemental plate below the symbol sign. It may be used in repetition with appropriate revisions in the supplemental distances plate or in conjunction with other construction signs.

The word message sign W20–7 with appropriate distances may be used as an alternate to the W20–7a flagger symbol sign.

The sign shall be promptly removed, covered, or turned to face away from the roadway whenever the flagger is not at the station.

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6B-21 Two-Way Traffic Sign (W6-3)

Two-Way Traffic sign should be used as needed at intervals to periodically remind drivers that they are on a two-way highway which contains opposing traffic.

W6-3
48" x 48"

6B-22 Application of Maintenance and Minor Construction Warning Signs.

At many maintenance and minor construction operations, particularly on lightly traveled roads, there may be no need for the sequence of Construction Approach Warning signs prescribed for major operations. The signs described in the following sections and on figures 6-13a and 6-13b, will ordinarily provide sufficient advance warning in such situations, either by themselves or in combination with appropriate Construction Approach Warning signs, as dictated by conditions. In addition, some of them may be needed inside the limits of a major work area where traffic is maintained through the job.

6B-23 Worker Sign (W21-1)

A Worker sign is intended for use in conjunction with minor maintenance and public utility operations for the protection of workers in or near the roadway. On low-speed urban roads a worker sign is intended for use at limited obstruction sites which are adequately marked and clearly visible, such as an open manhole with a fence around it. The W21-1 word message sign may be used as an alternate to the W21-1a Worker Symbol sign.

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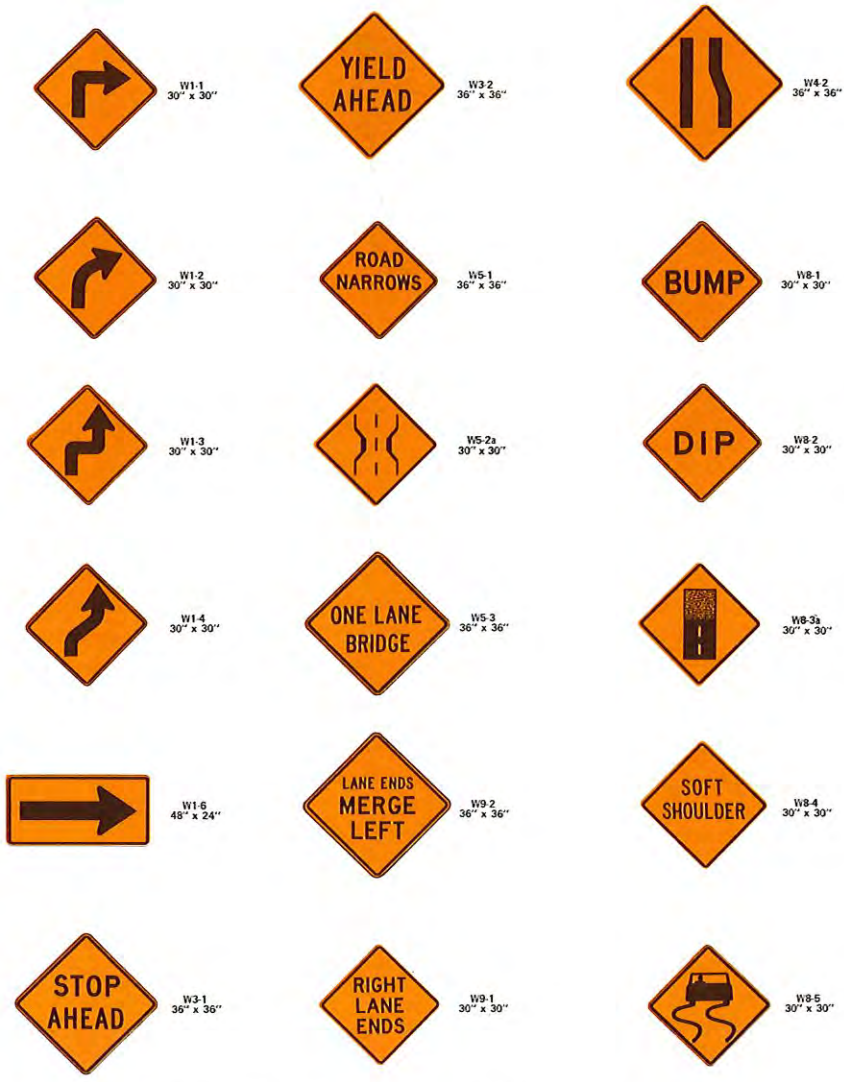

Figure 6–13a. Warning signs used in construction areas.

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3. Divided Highway Ends (W6–2)
4. BUMP (W8–1)
5. DIP (W8–2)
6. Pavement Ends (W8–3)
7. SOFT SHOULDER (W8–4)
8. TRUCK CROSSING (W8–6)
9. LOOSE GRAVEL (W8–7)
10. ROUGH ROAD (W8–8)
11. Low Shoulder (W8–9) | VI-4 (c)
12. BE PREPARED TO STOP
13. Chevron Panels

The application of most of these signs is prescribed in detail in Part II of this Manual, although their application is generally apparent from their legends. When used in construction operations, these signs shall have an orange background and when used in highway maintenance operations, they should have an orange background.

6B–34 Advisory Speed Plate (W13–1)

In conjunction with a warning sign, an Advisory Speed plate may be used to indicate a maximum recommended speed through the hazardous area. For use with orange construction and maintenance signs this plate shall have a black legend on an orange background and when used with yellow background warning signs shall have a yellow background.

W13-1
18" x 18"
24" x 24"

Except in emergencies, an Advisory Speed plate shall not be erected until the recommended speed has been determined by the authority in charge of the highway.

Guide Signs

6B–35 Function and Design of Information and Guide Signs

The following informational signs are required at construction and maintenance sites:

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1. Standard route markings, to the extent that temporary route changes are necessary.
2. Directional signs and street name signs, when used in conjunction with detour routing may have a black legend on an orange background.
3. Special information signs (secs. 6B-36 to 39) relating to the work being done. These signs shall have a black message on an orange background.

6B-36 Length of Construction Sign (G20-1)

The Length of Construction sign shall be erected at the limits of any road construction or maintenance job of more than 2 miles in extent, where traffic is maintained through the job. It carries the legend ROAD CONSTRUCTION NEXT (5) MILES. It can be effectively mounted on a wing barricade. This sign may be used where required, for jobs of lesser length or on urban streets with appropriate distances shown.

G20–1
60″ x 36″

G20–2
60″ x 24″

6B-37 End Construction (Road Work) Sign (G20-2)

The END CONSTRUCTION (ROAD WORK) sign should be erected approximately 500 feet beyond the end of a construction or maintenance job. It may be erected on the back of a warning sign set up facing the opposite direction of traffic or on the back of a wing barricade. Where appropriate, the legend END ROAD WORK may be used.

6B-38 Detour Signs and Markers (M4-8, 9 and 10)

The Detour Arrow sign (M4-10) is used at a point where a detour roadway or route has been established due to the closure of a street or highway to through traffic. It should normally be mounted just below the ROAD CLOSED sign (sec. 6B-8) or the Local Traffic Only sign (sec. 6B-9).

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M4–9R
30" x 24"

M4–10R
48" x 18"

The Detour Arrow sign uses a horizontal arrow pointed to the right or left as required at each location.

Each detour shall be adequately marked with standard temporary route markers and destination signs as a responsibility of the highway agency. The Detour marker (M4–8) (sec. 2D–24) mounted at the top of a route marker assembly is to be used to mark a temporary route that branches from a regular numbered route, bypasses a section of a route which is closed or blocked by construction, major maintenance, roadway damage or traffic emergency and rejoins the regularly numbered route beyond that section. The Detour sign (M4–9) (sec. 2D–25) is to be used for unnumbered routes; for use in emergency situations; for periods of short durations; or where, over relatively short distances, it is not necessary to show route markers to guide traffic along the detour and back to its desired route.

6B–39 Pilot Car Sign (G20–4)

The Pilot Car sign shall be mounted in a conspicuous position on the rear of a vehicle used for guiding one-way traffic through or around a road construction or maintenance project (sec. 6F–9). It carries the legend PILOT CAR—FOLLOW ME. A flagger must be stationed on every approach to a project on which a pilot car is used, to hold traffic as necessary until the pilot car is available to lead.

G20–4
36" x 18"

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F. CONTROL OF TRAFFIC THROUGH WORK AREAS

6F-1 Function

The primary function of traffic control procedures is to move traffic safety and expeditiously through or around work areas.

The control of traffic through work areas is an essential part of highway construction and maintenance operations. For these operations there must be adequate legislative authority for the implementation and enforcement of needed traffic regulations, parking controls and speed zoning. Such statutes must provide sufficient flexibility in the application of traffic control to meet the needs of the changing conditions in work areas.

Maintaining good public relations is necessary. The cooperation of the various news media in publicizing the existence of and reasons for work sites, therefore can be of great assistance in keeping the motoring public well informed.

6F-2 Hand Signaling Devices

A number of hand signaling devices, such as red flags, STOP/SLOW paddles and lights are used in controlling traffic through work areas. The flag is the most common device used during the daylight hours. The sign paddle bearing the clear messages STOP or SLOW also may be used.

Flags used for signaling purposes shall be a minimum of 24 by 24 inches in size, made of a good grade of red material securely fastened to a staff approximately 3 feet in length. The free edge should be weighted to insure tbat the flag will hang vertically, even in heavy winds.

Sign paddles should be at least 18 inches wide with letters at least 6 inches high. A rigid handle should be provided. This combination sign may be fabricated from sheet metal or other light semirigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW shall be orange with black letters and border. When used at night the STOP face shall be reflectorized red with white reflectorized letters and border, and the SLOW face shall be reflectorized orange with black letters and border.

6F-3 Flaggers

Since flaggers are responsible for human safety and make the greatest number of public contacts of all construction personnel, it is important that qualified personnel be selected. A flagger should possess the following minimum qualifications:

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1. Average intelligence.
2. Good physical condition, including sight and hearing.
3. Mental alertness.
4. Courteous but firm manner.
5. Neat appearance.
6. Sense of responsibility for safety of public and crew.

The use of orange clothing such as a vest, shirt, or jacket shall be required for flaggers. For nighttime conditions similar outside garments shall be reflectorized.

Flaggers are provided at work sites to stop traffic intermittently as necessitated by work progress or to maintain continuous traffic past a work site at reduced speeds to help protect the work crew. For both of these functions the flagger must, at all times, be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed before entering the work site. In positioning flaggers consideration must be given to maintaining color contrast between the work area background and the flagger's protective garments.

6F-4 Flagging Procedures

The following methods of signaling with a flag should be used:

1. *To Stop Traffic.* The flagger shall face traffic and extend the flag horizontally across the traffic lane in a stationary position so that the full area of the flag is visible hanging below the staff. For greater emphasis, the free arm may be raised with the palm toward approaching traffic.

2. *When it is Safe for Traffic to Proceed.* The flagger shall stand parallel to the traffic movement, and with flag and arm lowered from view of the driver, motion traffic ahead with the free arm. Flags shall not be used to signal traffic to proceed.

3. *Where it is Desired to Alert or Slow Traffic.* Where it is desired to alert or slow traffic by means of flagging, the flagger shall face traffic and slowly wave the flag in a sweeping motion of the extended arm from the shoulder level to straight down without raising the arm above a horizontal position.

If a sign paddel is used, it shall be held in a stationary position with the arm extended horizontally away from the body. For added emphasis, the flagger may slowly raise and lower the free hand with the palm down. The use of the flag and sign paddle are illustrated in figure 6-15.

Lights approved by the appropriate highway authority or reflectorized sign paddles or reflectorized flags shall be used to flag traffic at night. Daytime flagging procedures shall be followed whenever such lights, paddles or flags are used at night.

Whenever practicable, the flagger should advise the motorist of the reason for the delay and the approximate period that traffic will be

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FLAG

PADDLE

TO STOP TRAFFIC

TRAFFIC PROCEED

TO ALERT AND SLOW TRAFFIC

Figure 6-15. Use of hand signaling devices by flagger.

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halted. Flaggers and operators of construction machinery or trucks should be made to understand that every reasonable effort must be made to allow the driving public the right-of-way and prevent excessive delays.

6F-5 Flagger Stations

Flaggers stations shall be located far enough in advance of the work site so that approching traffic will have sufficient distance to reduce speed before entering the project. This distance is related to approach speed and physical conditions at the site; however 200 to 300 feet is desirable. In urban areas when speeds are low and streets closely spaced, the distance necessarily must be decreased.

The flagger should stand either on the shoulder adjacent to the traffic being controlled or in the barricaded lane. At a "spot" obstruction a position may have to be taken on the shoulder opposite the barricaded section to operate effectively. Under no circumstances should a flagger stand in the lane being used by moving traffic. The flagger should be clearly visible to approaching traffic at all times. For this reason the flagger should stand alone, never permitting a group of workers to congregate around the flagger station. The flagger should be stationed sufficiently in advance of the work force to warn them of approaching danger, such as out-of-control vehicles.

Flagger stations should be adequately protected and preceded by proper advance warning signs. At night, flagger stations should be adequately illuminated.

At short construction and maintenance lane closures where adequate sight distance is available for the safe handling of traffic the use of one flagger may be sufficient.

6F-6 One-Way Traffic Control

Where traffic in both directions must, for a limited distance, use a single lane, provision should be made for alternate one-way movement to pass traffic through the constricted section. At a "spot" obstruction, such as an isolated pavement patch, the movement may be self-regulating. However where the one-lane sectgon is of any length, there should be some means of coordinating movements at each end so that vehicles are not simultaneously moving in opposite directions in the section and so that delays are not excessive at either end. Control points at each end of the route should be chosen so as to permit easy passing of opposing lines of vehicles.

Alternate one-way traffic control may be effected by the following means:

1. Flagger control.
2. Flag-carrying or official car.
3. Pilot car.
4. Traffic signals.

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6F-7 Flagger Control

Where the one-lane section is short enough so that each end is visible from the other end, traffic may be controlled by means of a flagger at each end of the section. One of the two should be designated as the chief flagger for purposes of coordinating movement. They should be able to communicate with each other verbally or by means of signals. These signals should not be such as to be mistaken for flagging signals.

Where the end of a one-lane section is not visible from the other end, the flaggers may maintain contact by means of radio or field telephones. So that a flagger may know when to allow traffic to proceed into the section, the last vehicle from the opposite direction can be identified by description or license.

6F-8 Flag-Carrying or Official Car

Flag carrying is effective when the route is well defined and nonhazardous. It should be employed only when the one-way traffic is confined to a relatively short stretch of road, usually not more than 1 mile in length.

The driver of the last vehicle proceeding into the one-lane section is given a red flag (or other token) and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that is is safe to allow traffic to move in the other direction. The flag being carried should always be clean and dry.

A variation of this method is the use of an "official" car which always follows the last vehicle proceeding through the section. The use of an official car eliminates the possibility of loss of the flag.

6F-9 Pilot Car

The use of a pilot car for traffic control can be most effective where the route is particularly hazardous, or so involved or frequently altered as to preclude adequate signing. The pilot car is used to guide a train of vehicles through the job or detour. Its operation must be coordinated with flagging operations or other controls at each end of the one-lane section. Sufficient turnaround room should be provided at these points. Provision should be made for identification of the last vehicle in the column.

The vehicle selected for pilot-car study should be light weight and easy to handle and should have the name of the contractor or contracting authority prominently displayed. The Pilor Car sign (sec. 6B-39) shall be mounted on the rear of the vehicle.

Two or more pilot cars may be used to guide two-way traffic through a particularly complex or hazardous detour.

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6F-10 Traffic Control Signals

Traffic control signals may be used for special applications to control vehicular traffic movements at construction or maintenance work areas. Typical applications include:

1. A highway or street intersection with a temporary "haul road" or equipment crossing.
2. Through areas requiring one-way traffic operations.

All traffic signal and control equipment shall meet the applicable standards and specifications prescribed in Part IV of this Manual. Normally, these installations shall be operated by means of traffic actuation or manual control.

One-way traffic operation necessitates the use of an all-red interval of sufficient duration for traffic to clear the zone at the speed posted through the work area.

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E. CROSSING SUPERVISION

7E-1 Types of Crossing Supervision

There are two types of school crossing supervision:

1. Adult control of pedestrians and vehicles with adult guards or police officers.
2. Student control of only pedestrians with student patrols.

Recommended practices for the organization, operation and administration of an adult crossing guard program are given in Civilian Guards For School Crossings* and Adult School Crossing Guards.**

Recommended practices for the organization, administration and operation of a student patrol program are given in Policies and Practices for School Safety Patrols.**

7E-2 Adult Guards

Adult guards may be used to provide gaps in traffic at school crossings where an engineering study has shown that adequate gaps must be created (sec. 7A-3).

7E-3 Legal Authority for Adult Guards

Adult guards should be special police officers appointed by the local police agency.

The local police agency should be responsible for the selection, training and supervision of adult guards.

7E-4 Choice of Adult Guards

High standards for selection of adult guards are essential. Adult guards must understand children and in addition should possess the following qualifications:

1. Average intelligence
2. Good physical condition, including sight and hearing
3. Mental alertness
4. Neat appearance
5. Good character
6. Dependable
7. Sense of responsibility for safety of children.

* Available from the Traffic Institute of Northwestern University, 405 Church St., Evanston, Illinois 60204.
** Available from the American Automobile Association, Falls Church, Va. 22042.

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7E-5 Uniform of Adult Guards

Adult guards should be uniformed so that motorists and pedestrians can recognize them and respond to their signals. It is recommended that their uniforms be distinctively different from those worn by regular police officers.

7E-6 Operating Procedures for Adult Guards

Adult guards should not direct traffic in the usual police regulatory sense. In the control of traffic, they should pick opportune times to create a safe gap. At these times, their presence in the roadway serves as an easily recognized indication that pedestrians are about to use the crosswalk, and that all traffic must stop. Adult crossing guards may use an 18" stop paddle, similar to the one set forth in section 6F-2, except that the paddle shall have "STOP" on one or both sides and that it shall be reflectorized or illuminated when used during hours of darkness. The legend shall be at least 6" series capital letters. When all traffic has stopped, the adult guard allows the children to cross.

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7E-7 Police Officers

Police officers should be used for school crossing supervision only in emergency situations on a temporary basis or at very hazardous school crossings where the use of adult guards is not feasible.

7E-8 Student Patrols

Student patrols may be used to direct and control children at crossings near schools where there is no need to create adequate gaps in traffic.

Student patrols may be used to direct and control children at signalized intersections where turning movements are not a problem, and to assist adult guards in the control of children at crossing locations used by large numbers of children.

Student patrols should not be responsible for directing vehicular traffic. They should not function as police.

7E-9 Legal Authority for Student Patrols

Student patrols should be authorized by the local school board. School authorities should be responsible for organizing, instructing and supervising patrols with the assistance of the local police.

7E-10 Choice of Student Patrols

Student patrols should be carefully selected. They should be children from the 5th grade or higher. Leadership and reliability should be determining qualities for patrol membership.

Parental approval should be obtained in writing before a child is used as a member of a student patrol.

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8B-3 Railroad Advance Warning Sign (W10-1)

A Railroad Advance Warning sign shall be used on each roadway in advance of every grade crossing, with the following exceptions: (1.) on low volume, low speed roadway crossing minor spurs or other tracks which are infrequently used and which are flagged by train crews; (2.) in the business districts of large cities where active grade crossing traffic control devices are in use; (3.) or where physical conditions do not permit even a partially effective display of the sign. On divided highways it is desirable to erect an additional sign on the left side of the roadway.

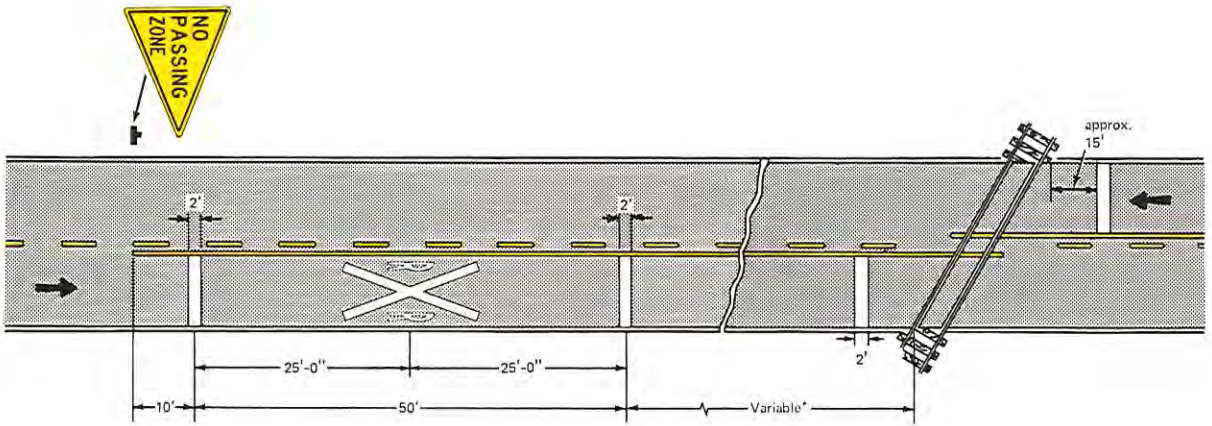
Placement of the sign shall be in accordance with section 2C-3 and sections 2A-21 to 2A-27, normally 750 feet or more in advance of the crossing in rural areas and 250 feet in advance of the crossing in urban areas except that in a residential or business district, where low speeds are prevalent, the sign may be placed a minimum distance of 100 feet from the crossing. If there is a street intersection within 100 feet an additional sign or signs may be placed to warn traffic approaching the crossing from each intersected street. Lateral clearance of the advance warning signs are determined by the same criteria as for the crossbuck sign.

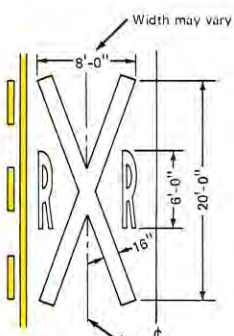
W10-1
36" Diameter

8B-4 Pavement Markings

Pavement markings in advance of a grade crossing shall consist of an X, the letters RR, a no passing marking (2-lane roads), and certain transverse lines. Identical markings shall be placed in each approach lane on all paved approaches to grade crossings where grade crossing signals or automatic gates are located, and at all other grade crossings where the prevailing speed of highway traffic is 40 mph or greater.

The markings shall also be placed at crossings where engineering studies indicate there is a significant potential conflict between vehicles and trains. At minor crossings or in urban areas, these markings may be omitted if engineering study indicates that other devices installed provide suitable control.





*The distance from the railroad crossing marking to the nearest track will vary according to the approach speed and the sight distance of the vehicular traffic approaching, but probably should be not less than 50 feet.

A three-lane roadway should be marked with a centerline for two-lane approach operation on the approach to a crossing.

On multi-lane roads the transverse bands should extend across all approach lanes, and individual RXR symbols should be used in each approach lane.

Refer to Standard Alphabet for Highway Signs and Markings for RXR symbols details.

Figure 8-2. Typical pavement markings at railroad-highway grade crossings.

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B. SIGNS

9B-1 Application of Signs

Bicycle-use related signs on highways and bikeways serve three basic purposes: regulating bicycle usage, directing bicyclists along preestablished routes, and warning of unexpected conditions. Care should be taken not to install too many signs. A conservative use of regulatory and warning signs is recommended as these signs, if used to excess, tend to lose their effectiveness. The frequent display of guide signs, however, aids in keeping the bicyclist on the designated route and does not lessen their value. Some signs for the bicyclist can also serve the motorist and the pedestrian.

9B-2 Location and Position

Where signs are to serve both bicyclists and motorists, mounting heights and lateral placement shall be as specified in Part II, Signs. Figure 9-1 illustrates typical signing placement for bicycle trails. Overhead sign clearance on bicycle trails shall be a minimum of 8½ feet. The clearance provided should also be adequate for the typical maintenance vehicles used on the bikeway. Where signs are for the exclusive use of bicyclists, care should be taken that they are located so that motorists are not confused by them.

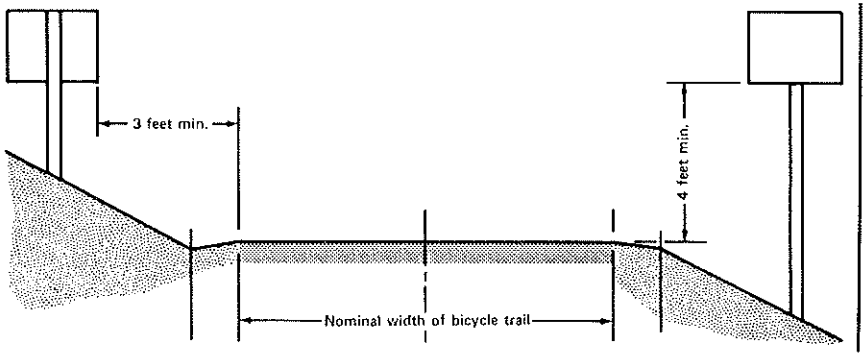

Figure 9-1. Bicycle sign placement on a trail.

9B-3 Design

The design of signs for bicycle facilities should, whenever possible, be identical to that specified in this Manual for motor vehicle travel. Uni-

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formity in design includes shape, color, symbols, wording, lettering, and illumination or reflectorization. Detailed drawings of the standard signs illustrated in this Manual are available to State and local highway and traffic authorities, sign manufacturers, and similar interested agencies.* Standardization of these signs does not preclude further improvement by minor changes in the proportion of symbols, stroke width, and height of letters, or width of borders. However, all shapes and colors shall be as indicated, all symbols shall be unmistakably similar to those shown and (where a word message is applicable) the wording shall be as provided herein.

The sign dimensions shown in this part of the Manual shall be considered standard for application on all types of bicycle facilities. Where signs shown in other parts of this Manual are intended for exclusive bicycle use, smaller sign sizes from that specified may be used. Incremental increases in special bicycle facility signs are also desirable to make the sizes compatible with signs for motor vehicles, where both motorists and bicyclists benefit by a particular sign.

The sign lettering shall be in upper-case letters of the type shown in the Standard Alphabets for Highway Signs and Pavement Markings*

All signs should be reflectorized for bicycle trails as well as for shared roadway and designated bicycle lane facilities.

9B-4 Regulatory Signs

Regulatory signs are to inform bicyclists, pedestrians and motorists of traffic laws or regulations and indicate the applicability of legal requirements that would not otherwise be apparent.

Regulatory signs normally shall be erected at the point where the regulations apply. The sign message shall clearly indicate the requirements imposed by the regulations and shall be easily visible and legible to bicyclists and where appropriate, motorists and pedestrians.

9B-5 Bicycle Prohibition Sign (R5-6)

This sign is intended for use at the entrance to facilities, such as freeways, where bicycling is prohibited. Where pedestrians and motor—driven cycles are also prohibited from using these facilities, it may be more desirable to use the R5-10a word message sign (sec. 2B-28).

In reduced size (18 × 18 inches), this sign may be used on sidewalks where bicycle riding is prohibited.

9B-6 Motor Vehicle Prohibition Sign (R5-3)

This sign is intended for use at the entrance to a bicycle trail.

* Available from the Federal Highway Administration (HTO-20) Washington, D.C. 20590

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9B-18 Other Warning Signs

Other warning signs may be required on bicycle facilities to warn riders of unexpected conditions. The intended use of these signs generally is self-explanatory. They should normally be installed no less than 50 feet in advance of the beginning of hazards.

Where construction or maintenance activity is present on bicycle trails, appropriate signs from Part VI of the Manual should be used.

9B-19 Guide Signs

On highways where a bicyclist is sharing a lane with motor vehicles or is using an adjacent bikeway, the regular guide signing as described in Part II of this Manual will serve both modes of travel. Where a designated bikeway exists, special bicycle route signing should be

W3-1
18" x 18"

W3-3
18" x 18"

W5-4
18" x 18"

W7-5
18" x 18"

W11A-2
18" x 18"

W12-2
18" x 18"

W10-1
18" Diameter

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provided at decision points along the bikeway, including signs to inform cyclists of bicycle route direction changes and confirmatory signs to ensure that route direction has been accurately comprehended.

Figure 9-2 shows an example of the signing for the junction of a bicycle trail with a highway. Figure 9-3 shows the signing and marking for the beginning and ending of designated bikeways. Guide signing should be repeated at regular intervals to ensure that bicyclists approaching from side streets know they are traveling on an officially designated bikeway. Similar guide signing should be used for shared lane bikeways with intermediate signs placed frequently enough to ensure that cyclists already on the bikeway do not stray from it and lose their way.

9B-20 Bicycle Route Sign (D11-1)

This sign is intended for use where no unique designation of routes is desired. It should be placed at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists.

D11-1
24" x 18"

M1-8
12" x 18"

M1-9
18" x 24"

9B-21 Bicycle Route Markers (M1-8, M1-9)

Where it is desired to establish a unique identification (route designation) for a State or local bicycle route, the standard Bike Route Marker (M1-8) should be used. The route marker (M1-8) shall contain a numerical designation and shall have a green background with a reflectorized white legend and border.

Where a bicycle route extends for long distances in two or more States, it is desirable to establish a unique numerical designation for that route. A coordinated submittal by the affected States for assignment of route number designations should be sent to the American Association of State Highway and Transportation Officials, 444 North Capitol Street NW., Suite 225, Washington, D.C. 20001. The route marker (M1-9) shall contain the assigned numerical designation and have a black legend and border with a reflectorized white background. IX-1 (c)

Bike Route Markers are intended for use on both shared facilities and on designated bikeways, as required, to provide guidance for bicyclists.

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